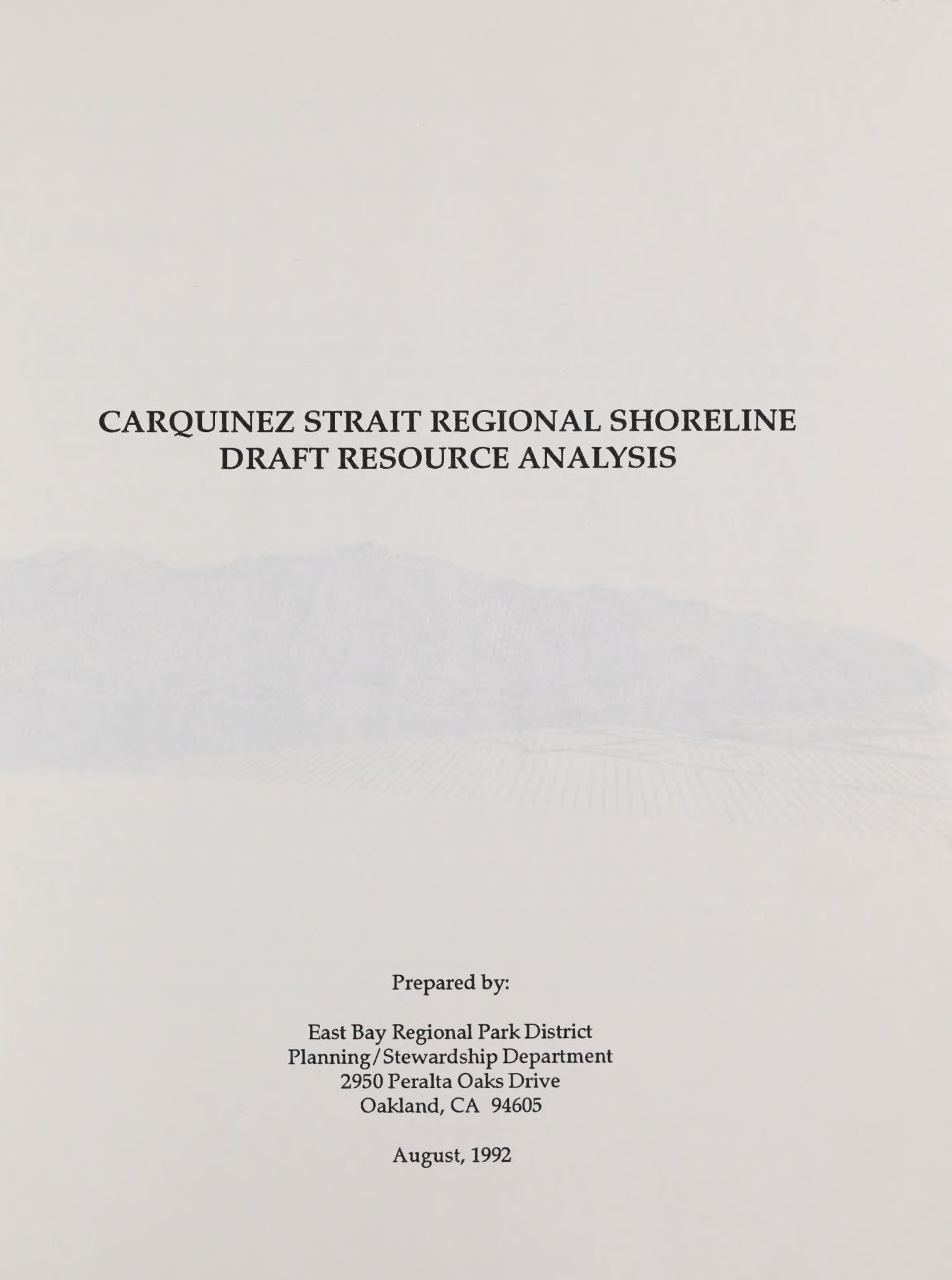


Carquinez Strait Regional Shoreline

*Resource Analysis
Draft*



East Bay Regional Park District

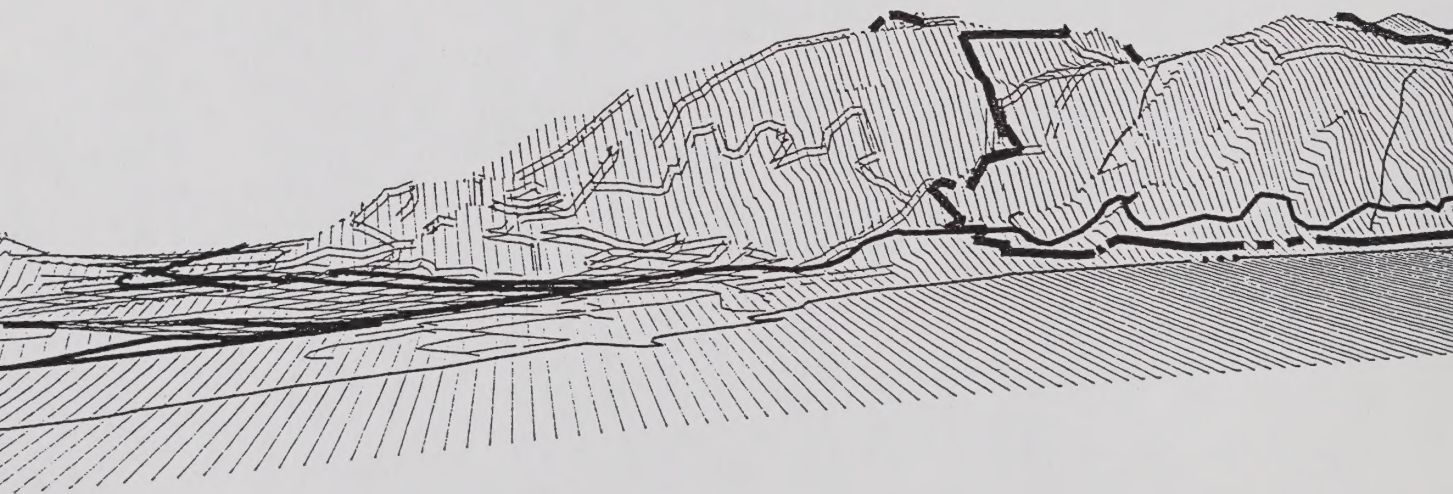


CARQUINEZ STRAIT REGIONAL SHORELINE DRAFT RESOURCE ANALYSIS

Prepared by:

East Bay Regional Park District
Planning/Stewardship Department
2950 Peralta Oaks Drive
Oakland, CA 94605

August, 1992





Digitized by the Internet Archive
in 2025 with funding from
State of California and California State Library

<https://archive.org/details/C124922364>

*"...I was almost wild to get out alone with the big sail and
go tearing down the Carquinez Strait..."*

Jack London,
Tales of the Fish Patrol

FOREWORD

Carquinez Strait channels waters flowing from Sierran snow beds through the vast fields of the Central Valley to meet the salt waters of the Pacific Ocean in the San Francisco Bay. The broad streams of the San Joaquin and Sacramento Rivers converge in the Carquinez Strait and along their course supply water for over two thirds of California residents. Much of this immense ancient water system is visible from the bluffs rising above the Carquinez Strait Regional Shoreline.

We usually speed by these waters on freeways or over them on bridges, catching a glimpse of sailboats on the way to somewhere else. At Carquinez Strait Regional Shoreline one can sit quietly under coastal bluffs next to the water's edge and contrast the relatively recent trappings of human history, the factories, subdivisions, railroads and ships, to the larger, more permanent forces of nature at this northern border of the Bay.

This waterfront area offers tremendous potential for recreation, preservation of natural resources and education. The diversity of resources is reflected in the special aspects of the park's location; its views, open water, trail system, marine climate and historic buildings. It is the water oriented and water dependent attributes that make this site so unique -- an area of truly regional significance.

To determine the feasibility of Carquinez Strait Regional Shoreline to function as a park, it is necessary to understand the natural and cultural features that the area possesses; for these are the primary materials from which the park is to be made. The purpose of the Resource Analysis is to describe and locate those features that are most crucial to the development of a plan that will preserve the park's natural resources and develop its recreational opportunities: topography, slope, hydrology, vegetation, wildlife, soils, geology, visual attributes, roadways, trails and cultural resources. This information will form the foundation upon which the Land Use-Development Plan will be built.

**CARQUINEZ STRAIT REGIONAL SHORELINE
DRAFT RESOURCE ANALYSIS**

TABLE OF CONTENTS

	<u>Page</u>
I. SUMMARY	1
II. INTRODUCTION	7
A. Description and Location	7
B. Land Use History	9
C. Regional Shoreline Classification and Purpose	11
III. NATURAL RESOURCES INVENTORY	13
A. Topography and Visual Resources	13
B. Water Resources and Water Quality	17
C. Geology and Soils	22
D. Biological Resources	28
E. Climate and Air Quality	38
IV. CULTURAL RESOURCES INVENTORY	39
A. Archaeological Resources	39
B. Access, Circulation and Transportation	43
C. Recreation Facilities and Use	50
D. Service Facilities and Utilities	54
E. Ownership, Easements and Legal Agreements	57
F. Zoning and Other Agency Designations	60
V. BIBLIOGRAPHY	66
References Cited	66
VI. REPORT PREPARATION	67
VII. APPENDICES	68
Appendix A - Purpose and Role of the East Bay Regional Park District	68
Appendix B - East Bay Regional Park District Planning Process	69
Appendix C - List of Plants	72
Appendix D - List of Wildlife Species	77
Appendix E - List of Aquatic Vertebrates and Invertebrates	83
Appendix F - User Survey	87

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1-1 Vicinity Map	2
1-2 Opportunities and Constraints Map	4-5
2-1 Location Map	6
2-2 Land Grant Map of Contra Costa County	10
3-1 Hydrology and Topography	20-21
3-2 Soils and Landslides	26-27
3-3 Natural Resources	36-37
4-1 Indian Tribes Around San Francisco Bay	39
4-2 Ridge and Shoreline Trails	44
4-3 Existing Facilities and Circulation	48-49
4-4 White's Resort	51
4-5 Acquisition Parcel Map	58-59
4-6 General Plan Designation	64-65



I. SUMMARY

Carquinez Strait Regional Shoreline is a park of high rounded hills that form the open space backdrop for three quiet waterfront towns: Martinez, Crockett and Port Costa. Visitors to this recently opened park have taken advantage of splendid hiking opportunities reminiscent of those provided by the rolling hills of nearby Briones Regional Park. What sets this site apart from other regional parks is the combination of typical park features (open land and trails) with extraordinary opportunities for water-related recreation and a vivid and rich history of human endeavor.

The park also offers an interesting sequence of views, including sweeping panoramas of the Strait and Delta region; visually interesting features, such as bridges, piers, factories and the changing scene offered by the day-to-day shipping and boating activities of the Strait.

Within the interior parkland perennial water resources are scarce. Consequently, the land has never sustained abundant wildlife populations or early human settlements. The deep waterway adjacent to the park, however, provided the conditions for a brief explosion of industrial activity at the turn of the century. It continues to serve as a site for boating and sport fishing.

The land is now in transition. It is shifting from its former industrial and agricultural uses to use as open space and recreational parkland.

The park does not yet function as a cohesive open space and recreation place. The park exists in five discontinuous land parcels. Carquinez Strait Regional Shoreline is fragmented along approximately four miles of river waterfront in five separate land parcels. Public access is split between the east and west entrances at Martinez and Crockett respectively. Two landslides on either side of White's Resort in 1983 effectively

blocked the single roadway linking the two ends of the park. Carquinez Scenic Drive is no longer a public thoroughfare for automobiles although maintenance and emergency vehicles are able to drive through the park on this road. The landslide damaged road is not the only constraint preventing access to this park. Existing parkland holdings have limited potential for new staging areas and public access because of the lack of connection to public roads. Additional acquisitions could enhance and protect existing views and improve access opportunities. Marina and fishing facilities could be rebuilt and connected to existing parkland. Trails could be expanded to link the park to other recreation areas and trail corridors. The Land Use Development Plan (LUDP) will examine these possibilities in an effort to create an accessible regional shoreline park. The following discussion summarizes the opportunities and constraints to the development of the LUDP. See Figure 1-2.

OPPORTUNITIES

ACCESS. Vehicle access to the park from major roads is generally good. Access exists at two staging areas along Carquinez Scenic Drive, at the west and east ends of the park. Opportunities for additional vehicle access should be considered at portions of the park not yet open for public use; the Crockett Hills Unit and the Port Costa Conservation Society land. Trail links may be possible between the Carquinez Strait Regional Shoreline and Martinez Shoreline, Rankin Park and other open space lands. Bicycle and pedestrian access along Carquinez Scenic Drive could be enhanced by weekend road closure for recreational use. East Bay Regional Park District has an agreement with Southern Pacific Railroad to construct railroad crossings at the locations along the Carquinez Strait Regional Shoreline to provide access to the water's edge.

— East Bay Traits



1-1

LOCATION. Clearly, Carquinez Strait Regional Shoreline has become an intrinsic element in the lives of residents from Crockett, Port Costa and Martinez. The park receives daily use from these neighboring towns. At the same time, the park is developing a regional park status because of its proximity to freeways, attractive regional trails, and its location on the water, drawing people from around the San Francisco Bay Area.

VIEWS. Along the ridgetops and shoreline of Carquinez Strait Regional Shoreline panoramic vistas of the north bay are available. Short-range scenic views of Carquinez Strait and shipping activity can be seen from White's Resort, the Eckley townsite and the Port Costa Hills. Sweeping views of the surrounding hills and communities are available from peaks in the Crockett and Franklin Hills. Trails and facilities should be located to take advantage of these views.

RECREATION. The existing trail system permits hiking and riding through scenic openlands and hiking and especially bicycling along four miles of shoreline. The shoreline provides locally important fishing spots, a naturally occurring sandy beach at Eckley, and a fishing pier at White's Resort. Existing piers at Eckley may be usable for rebuilding waterfront structures. Some usable existing utilities are available at White's Resort and Eckley. Access to a deep water channel and prevailing winds provides opportunities for boating and sailing.

HISTORIC AND CULTURAL FEATURES
The Carquinez Strait Regional Shoreline contains significant physical evidence from California's grain shipping industry and other water-related history, notably the grain warehouse, ferry ruins and brick office building on the Eckley townsite. These structures provide an excellent opportunity for inter-

pretive and public education displays and features that relate to the local and historical context of Carquinez Strait.

CONSTRAINTS

PHYSICAL BARRIERS. Southern Pacific Railroad maintains an active railroad track that creates an access barrier between the park's open space areas and the shoreline.

SAFETY. Decaying piers and pilings require upgrading or removal. The existing pier at White's Resort is not fully functional because it does not meet current building code standards.

LAND USES IN PRIVATE OWNERSHIP
Private land use limits access to the Crockett Hills and surrounding Franklin Ridge open land. The Ozol Fuel Depot and Port Costa Materials (brickworks) dominate the traffic along Carquinez Scenic Drive, somewhat limiting its recreational use. Potential development on Franklin Ridge above Highway 4 will affect views of this scenic ridge.

GEOLOGIC HAZARDS. Erosion and landslide activity along the shoreline will constrain improvements to road access for White's Resort and Eckley. Landslides on Carquinez Scenic Drive fragment the park into east and west sections limiting access opportunities and the opportunity to connect the park by motor vehicle use.

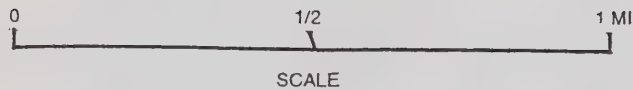
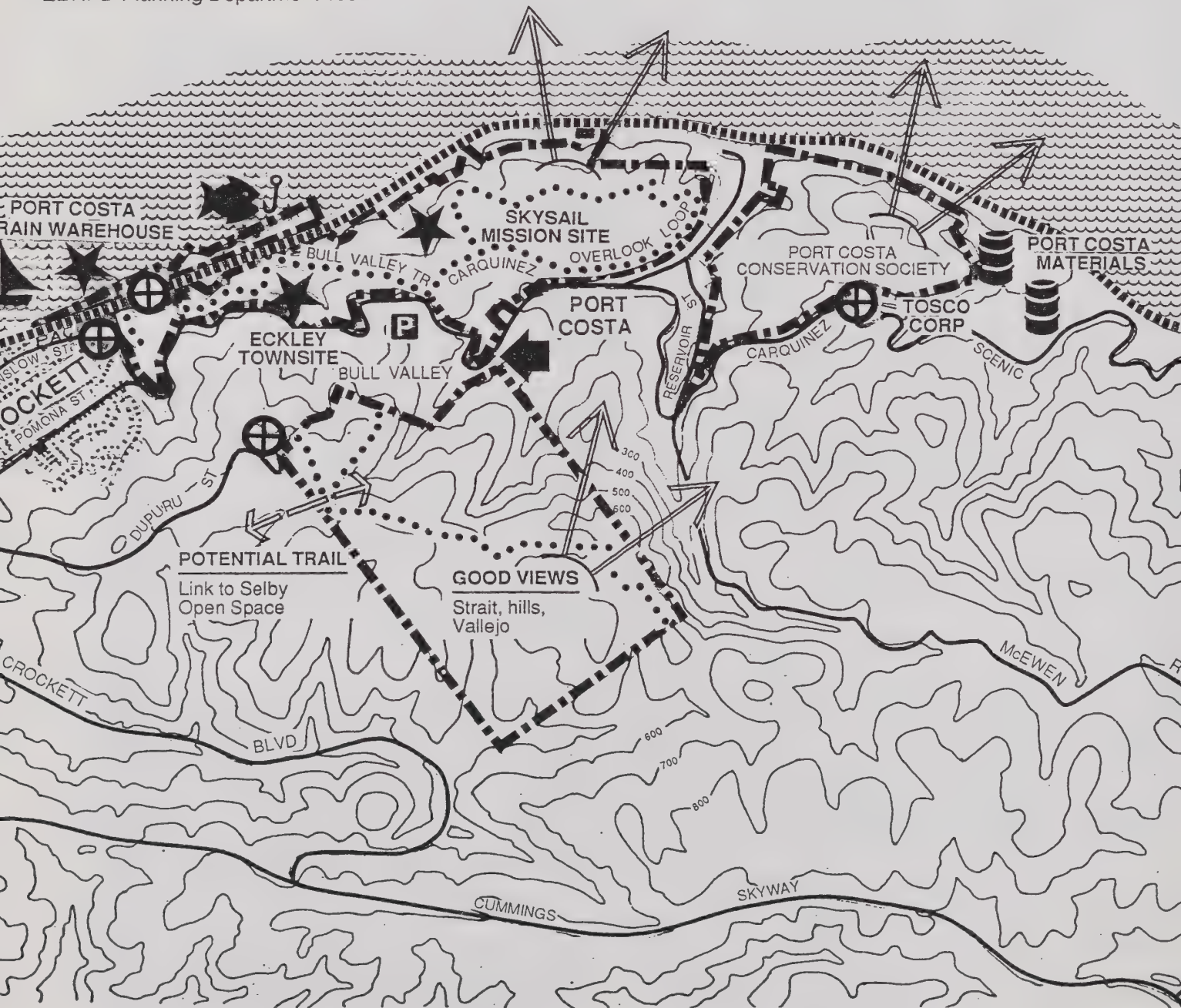
CLIMATE. The marine climate is not a major constraint to recreation development, but the design details of picnic areas and water-related facilities should address the prevailing winds through the use of screen plantings and protected seating or viewing platforms.

Carquinez Strait Regional Shoreline

Figure 1-2

OPPORTUNITIES & CONSTRAINTS

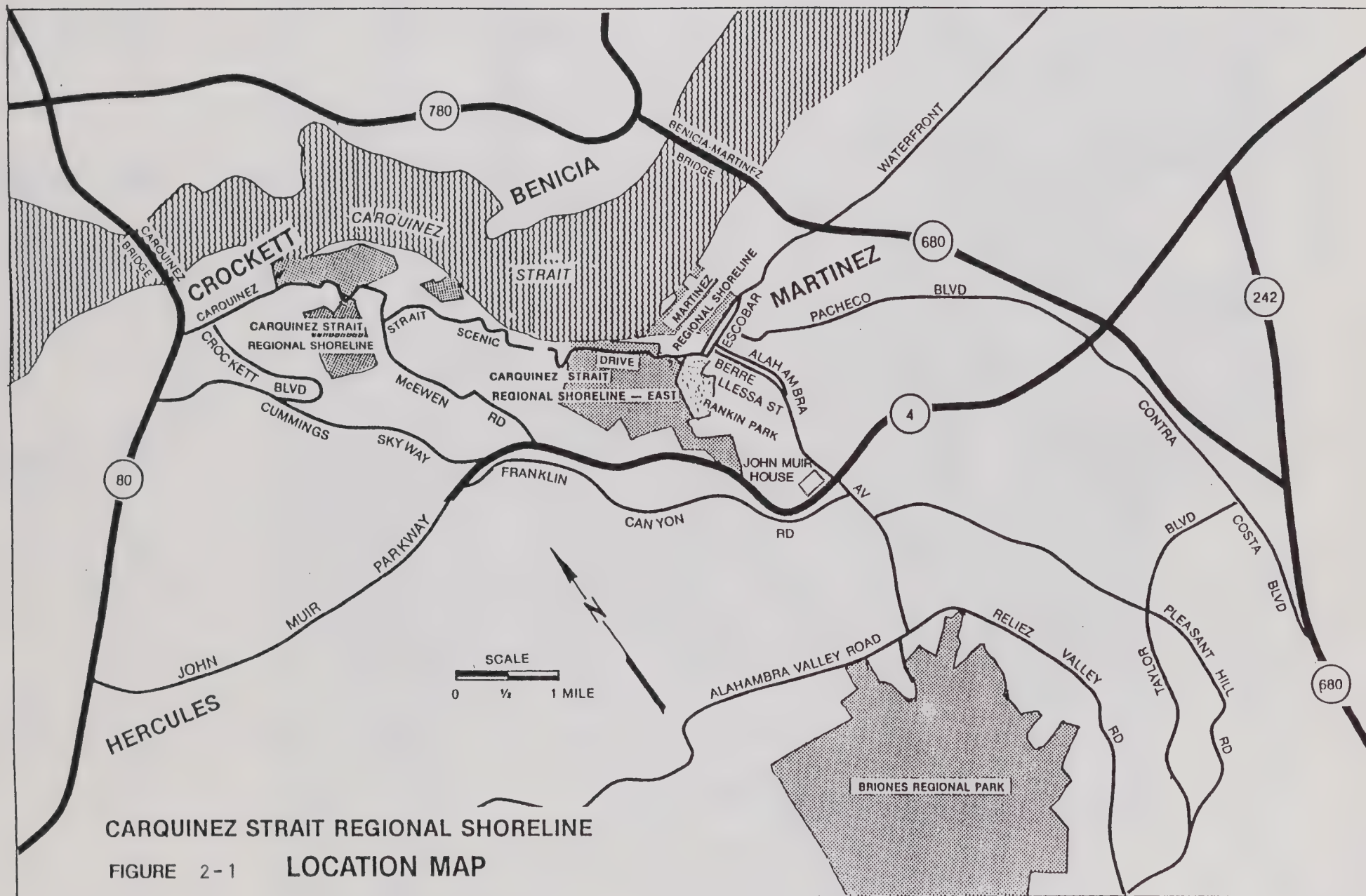
EBRPD Planning Department 1992



LEGEND

- | | | | | | |
|-----------------------------|-----|-------------------------|-----|-----------------------|-----|
| Historic Points of Interest | ★ | Existing Marina | ⚓ | Potential Trail Links | —→ |
| Good Views | ↗ ↘ | Railroad Barrier | ⋯⋯⋯ | Existing Trails | ⋯⋯⋯ |
| Vehicular Access | ➡ | Industrial Land Uses | 🗑️ | Staging | Ⓟ |
| Existing Fishing Area | 🐟 | Potential Public Access | ⊕ | | |





CARQUINEZ STRAIT REGIONAL SHORELINE
FIGURE 2-1 LOCATION MAP

II. INTRODUCTION

A. DESCRIPTION AND LOCATION

Carquinez Strait Regional Shoreline totals 1077 acres of bluffs and riverside along the south shore of Carquinez Strait. Three separate land units combine to provide a gateway to the river/delta region of the San Francisco Bay along the northern edge of Contra Costa County. See Figure 4-5. This irregularly shaped parkland extends north to the Carquinez Strait, south to Highway 4, east to the City of Martinez Rankin Park and west to the town of Crockett.

At the east end of the park, the Franklin Hills Unit is located above the Carquinez Scenic Highway on the Franklin Ridge overlooking Martinez. Thirty acres lie north, or below the highway, bordered by the Southern Pacific railroad tracks at sea level. This unit also includes White's Resort, one of two locations where the park's sloping terrain terminates at a usable shoreline area. The Port Costa Unit encompasses grassland rising above both sides of the town of Port Costa and forming a continuous openspace west to Crockett. This site consists of open rolling grasslands, the wooded ravine of Bull Valley, eucalyptus groves and river shoreline access at the former Eckley townsite. The remnants of a former brickworks, grain wharf and resort, dating back to the turn of the century, recall the historic character of the site. The Crockett Hills Unit ascends steeply from the south side of Carquinez Scenic Drive to an elevation of 700 feet. This unit contains scenic ridgeland at the end of Dupuru Street, a residential road. This park unit is not open for park use.

The area has historically remained in agriculture and grazing land use because of its steep topography. These coastal hills rise from sea level up to 750 feet and are the predominant

feature of the park. From these peaks, sweeping views, almost 360° in scope are unbroken towards Mt. Diablo, Benicia, and Mt. Tamalpais and San Francisco Bay.

Carquinez Strait Regional Shoreline has been open for public use since 1989. Two staging areas for automobile parking were constructed permitting hiking, equestrian and bicycle use of the existing trail system. No other recreation or service facilities have been developed in the park. Even with only a minimum of facilities, Carquinez Strait Regional Shoreline has become a popular destination for local residents of Crockett, Port Costa and Martinez, as well as visitors from other areas of the San Francisco Bay Region.



Port Costa circa 1889
(reprinted courtesy of Charles Endom & Dick Murdock)



B. LAND USE HISTORY

Millions of king salmon used to crowd through the narrow Carquinez Strait before fanning out into the Sacramento and San Joaquin River systems to spawn. The first residents who settled along the three quarter mile wide passage of water that separates the East Bay and North Bay relied heavily on these abundant salmon resources. In 1799, Spanish explorers found an Indian village on a site that is now the town of Crockett. They named the Indians "Karkins" or "Carquins" and the water "Carquinez Strait" from the Greek word for crab. The Carquins, an Ohlone triblet, occupied both sides of the Strait, including what is now parkland. The Indian villages in the Crockett-Vallejo area were the wealthiest on the San Francisco Bay. They controlled trade throughout the Delta region and as far north to Sonoma and Clear Lake. The Carquins practiced a semi-sedentary life style, dividing their time between a main village and a series of seasonal camp and village sites. These camps were spread over the large area needed to assure them of adequate hunting

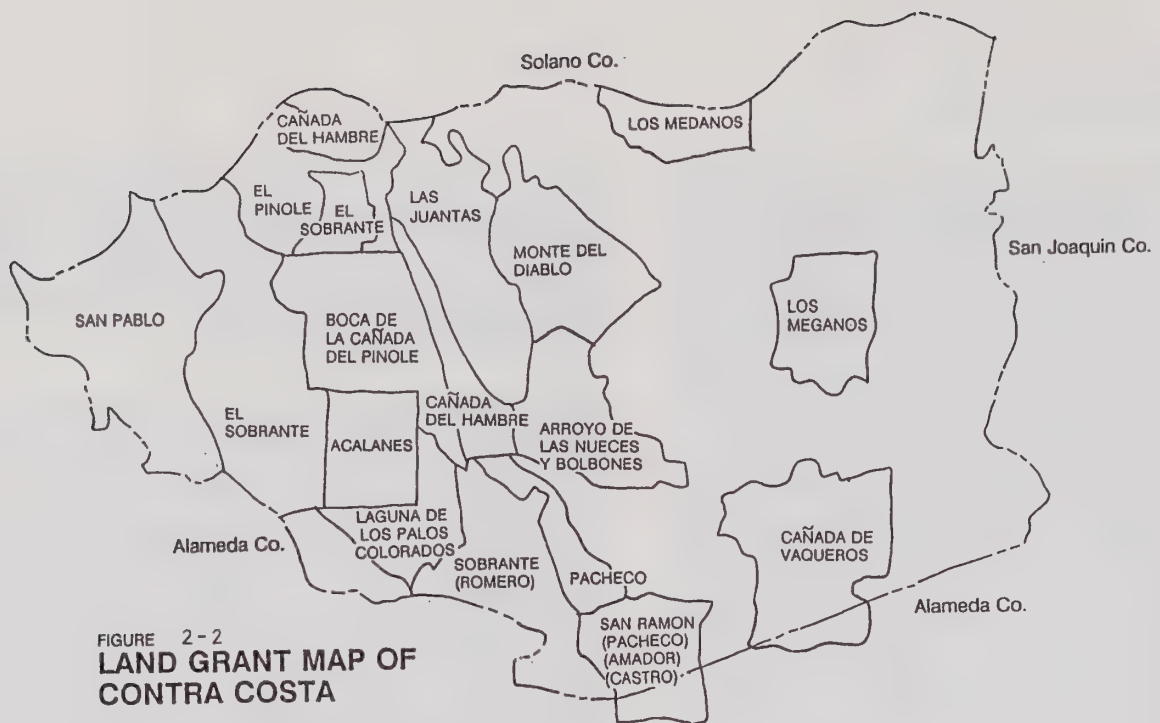
grounds, seed and acorn collection sites and other resources, such as the basalt stone used in their food preparation and hunting. (See Archaeology section for further detail regarding American Indian History.)

The area known as Carquinez Strait Regional Shoreline was included in the 1842 Mexican land grant, Rancho Canada del Hambre. See Figure 2-2. Teodora Soto, claimant for Rancho Canada del Hambre, was granted 13,312.7 acres by Juan B. Alvarado on May 18, 1842. The grant was confirmed by the Chartered States government in 1857 and in 1860 half of the land was sold to William Piper. In 1870, Piper sold a small portion of this land (374 acres) to John L. Eckley.

Pioneer Homesteads and Industrial Development

The northwestern corner of Carquinez Strait Regional Shoreline was once known as the town of Eckley. (dating back to 1870) Eckley was a small community built and named for





Commodore Eckley, a millionaire grain shipper and sportsman of the time. Eckley purchased the site on Carquinez Strait to serve as his personal yacht harbor. Eckley sold the shoreline properties, which was then developed by the Grangers Business Association. The warehouse built by the Grangers on this site was one of five warehouses which lined the southern shore of the Carquinez Strait between Crockett and Martinez by 1882. These warehouses were known as the Port Costa grain warehouses. By 1887, fourth-fifths of all the grain produced in Northern California was transported through the Port Costa grain warehouses.

Since John Eckley had sold only the shoreline at his death in 1896, his widow inherited most of the land that her husband had purchased from William Piper. She leased the land to the Carquinez Brick and Tile Company (CBTC). The clay soils along the Strait were excellent for brick making. In addition to the manufacturing facilities, the company built worker housing. Brick production began in the summer of 1907 and continued until August 1914 when the CBTC terminated its lease and went out of business.

In the next phase of its history, the site was used as a fishing resort. Michael Hallisy, a section foreman for the Southern Pacific Railroad rented the site for close to twenty years before purchasing it in 1944. Hallisy brought the "Garden City" ferry to Eckley and deliberately sank it into the mud, just offshore. Built for the Southern Pacific Railroad in 1879, the "Garden City" was a ferry which carried freight cars and passengers between Vallejo and Vallejo junction. The Hallisy family remodeled the ferry to accommodate their own living quarters, the headquarters for their sport fishing business, rooms for fishermen, a bar and the county's biggest dance floor. Left to deteriorate after the decline of the sport fishing business, the "Garden City" burned in 1983.

The town of Eckley, once a station stop for Southern Pacific's passenger trains, consisted of the original Eckley homestead, a grain warehouse, a brickworks, a fishing resort, worker bunkhouses, mess hall and wash house. Ten of the houses were located inland with five more homes perched along the Carquinez Strait. A few reminders of the

former townsite remain to convey the original appearance and feeling of the place. Despite the extensive fire damage to the warehouse, a portion of the original structure still stands. The partially submerged ruins of the Garden City Ferry sit on top of pilings originally supporting the Grangers Association Hotel. Most of the houses in Eckley were removed or torn down when the brickworks was constructed. The squat brick building still standing at the railroad crossing is all that remains at the Eckley Brickyard. It housed the company's offices.

Sky Sail Mission

In 1899, G.W. McNear loaned a site near Eckley to the Episcopal Church, where a mission was built. The two-story structure was built on a steep hill, 75 feet above the waters of the Carquinez Strait. It was called the Sky Sail Mission. The Mission offered communion, services and ceremonies to the hundreds of British, French and German sailors who came to Port Costa aboard grain vessels. The San Francisco Diocese of San Francisco sponsored the mission until 1910 when it closed because of the decline in grain trade. Ruins of the mission foundation still remain along the northwestern edge of the park.

Park Acquisition and Development

In 1982 a group of Contra Costa residents, recognizing the rapid urbanization along the Carquinez Strait, created an organization called the Port Costa Conservation Society (PCCS). This group worked with the towns of Crockett, Port Costa, the Coastal Conservancy and the East Bay Regional Park District to preserve open space in the Franklin and Crockett Hills.

PCCS developed a vision of a new East Bay park stretching five miles along the Carquinez Strait from Crockett to Martinez, bounded by

Highway 4 to the south. Seventy-nine acres on the east side of Port Costa were donated to the PCCS as permanent open space by Time Oil Company. This openland was the cornerstone in the formation of the Carquinez Strait Regional Shoreline, now managed by the East Bay Regional Park District. The openland adjacent to the Carquinez Strait was considered for park acquisition in the 1980 Master Plan.

The District responded to the movement to preserve the scenic hills overlooking Carquinez Strait with the purchase of 147 acres from the Hivest/Bema Corporation in 1985. Two additional purchases were made in 1986 and 1987 totalling 86 acres. In 1988, Measure AA, the Open Space, Wildlife, Shoreline and Park Bond was passed by East Bay voters. This bond earmarked \$4.1 million dollars to acquire the open space corridor between Martinez and Crockett to protect the scenic hills and shoreline remaining along the Strait. Funds were also allocated for public access, park development and shoreline recreation. Three more acquisitions were completed in 1987 and 1988 totalling 751 acres.

The shoreline and hills to the south of the Strait were designated in the 1989 Master Plan for protection and development as a regional shoreline. The most recent acquisitions in 1989 provided another 457 acres of openland for this park. The park currently totals 1077 acres.

C. REGIONAL SHORELINE CLASSIFICATION AND PURPOSE

Purpose

A Regional Shoreline preserves for public use significant recreational, educational, natural or scenic values on land, water and tidal areas, along the bay, a river or an estuary.

Minimum Standards

To be considered as a Regional Shoreline, an area must have one of the following characteristics:

- Be a shoreline area (or a group of smaller areas that are connected by trail or water access) that possesses a variety of natural environments and manageable units of tidal, near-shore areas, and wetlands and uplands that can be used for scientific, educational or environmental purposes.
- Be a shoreline area of land and water that can provide a variety of regional recreational activities, such as swimming, fishing, boating or viewing.
- The shoreline area immediately adjacent to the water will be available for public enjoyment and education. The natural areas are designated as Natural Units. The District will confine, where possible, all staging facilities (except for those that must be on the shoreline or over the water surface) to uplands that are a minimum of 100 feet from the actual shoreline. Facilities such as parking that do not depend on water will be in areas that are outside the general view of the public.
- Regional Shorelines will be accessible by public transit whenever feasible; by public ferry or private boat; or by a transportation system that connects to an inland site.

Planning and Management Guidelines

- A Regional Shoreline will conserve the significant resource values of the Alameda and Contra Costa shorelines and of shoreline-related recreation.
- Maximum public access to the Regional Shoreline will be provided through a variety of compatible shoreline recreational opportunities, while the District preserves or, when necessary, restores near-natural shoreline environments. Trails, roads and other park improvements will be designed to avoid or minimize impacts on sensitive wildlife habitats and rare plant populations.
- The District may develop areas within a Regional Shoreline that are designated as Recreation Units for active recreational pursuits. These may include beaches, picnic areas, shoreline meadow or turf areas, shoreline and pier fishing areas, small marinas, boat landings and launch ramps, visitor centers, outdoor educational or interpretive facilities, view points and necessary concessions.

III. NATURAL RESOURCES INVENTORY

A. TOPOGRAPHY AND VISUAL RESOURCES

1. Topography

The dominant topographic features of Carquinez Strait Regional Shoreline are the rounded peaks of the Franklin Ridge, the narrow steep canyons sloping to the shoreline and the broad slate-colored river waters of Carquinez Strait. The landforms are typified by abrupt elevation increases to the tops of ridgelines creating narrow canyons.

Elevation ranges from 748 feet atop a knoll in the southern Franklin Hills Unit to sea level at the shoreline. Moderately sloping terrain of

15-30% exists throughout the park. Steep slopes of 50-75% occur on northfacing uplands where the railroad was cut through hillsides. The visual resources of the park can be described in terms of: 1) the overall scenic character of the park; 2) the surrounding viewshed (off-site views observed from within the park) and 3) views of the park from the outside.





View of Carquinez Bridge, Crockett and Caruinez Shoreline

2. Overall Scenic Character

Carquinez Strait Regional Shoreline is difficult to appreciate as a single visual entity. It consists of three discontinuous land units. The park's shape is essentially linear as it is stretched across ridgetops between two parallel corridors, the shoreline and Highway 4. The predominant feature of the park is the open rolling grasslands that rise to sudden peaks and form the length of the southern boundary. The highest peaks and vista points are in the eastern edge of the Franklin Hills Unit. Five narrow wooded canyons open into small meadows before declining to the shoreline. The canyons of Bull Valley, White's Marina, Nejedley Staging Area, Crockett and Franklin Hills Unit are the only intimate enclosed areas within the park. Oak and brush

covered fingers of land drop sharply to the shoreline in the northeastern corner of the park in the Franklin Hills Unit. The park touches the shoreline at two locations: the Eckley townsite and White's Marina. Both of these areas are highly scenic places at the waters edge offering unique views of the coastal bluffs and the Strait. Other special visual features of the park are the historic structures marking the shoreline.

3. Surrounding Viewshed (off-site views)

Sweeping and impressive views are found on Franklin Ridge. From the highest knoll of 748', views are almost 360° in scope. Views to

the north and east include two bridges and the urban complex of Vallejo, Benicia, Concord, Martinez and Walnut Creek. Views to the south and east are unbroken towards the open lands of Briones, Las Trampas and Mt. Diablo. Long views west extend to San Francisco Bay and Mt. Tamalpais. The lower hills of the Port Costa Unit provide local unbroken views of the Strait and its ongoing shipping and sailing activities.

4. Outside Views of the Park

The Carquinez Regional Shoreline is a highly visible area viewed by large numbers of travellers on Highways 80, 680, and 4 and Carquinez Scenic Drive. The most noticeable and familiar aspects of the park are the open rolling grasslands and coastal bluffs of Franklin Ridge and the Carquinez Strait shoreline. The park serves as an important open

space backdrop to much of the north bay region (particularly to the communities of Martinez, Crockett, Port Costa, Benicia and Vallejo).

The relatively steep coastal bluffs along the northern edge of the park may be best appreciated from the waters of the Strait itself where the parkland forms a continuous open space from Port Costa to Crockett.

5. Resource Issues

- Trails and facilities should be located to take advantage of the park's landscape, shoreline and panoramic views.
- Consideration should be given to acquire parkland to protect the regional visual resource.

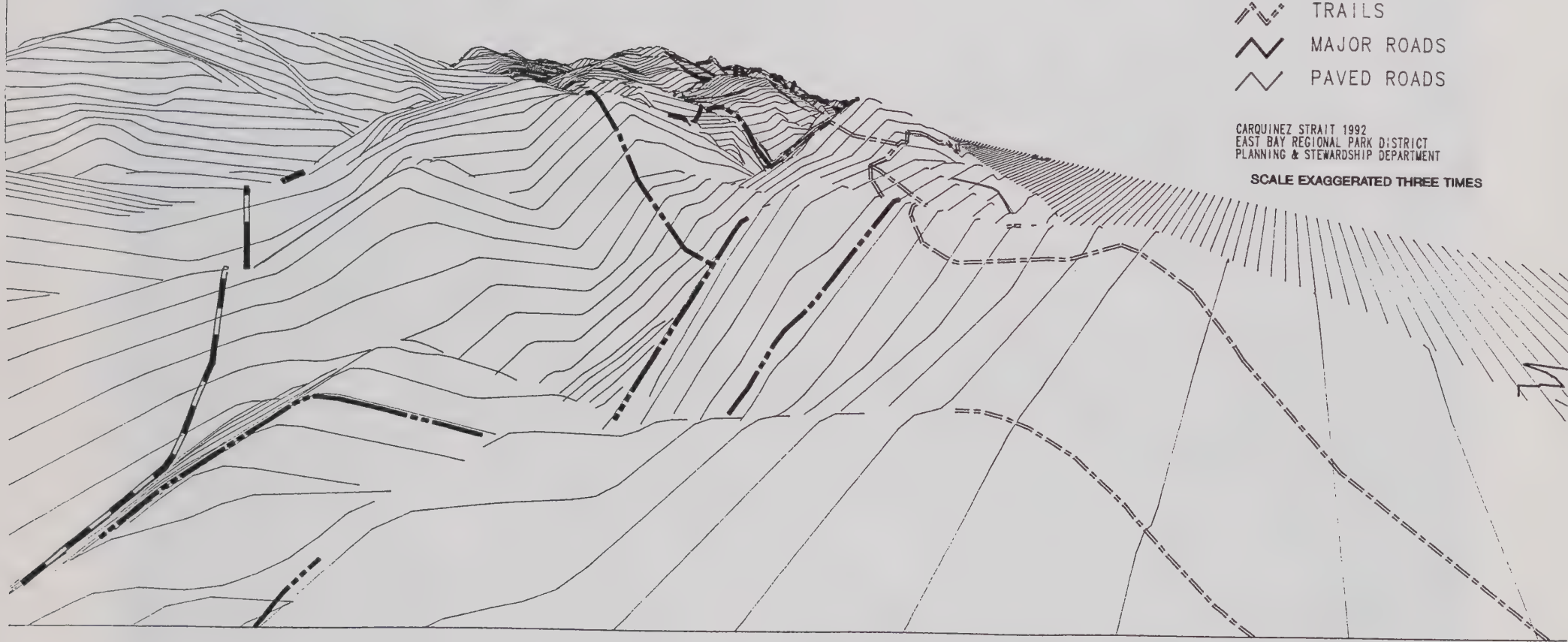


Topographic View of Carquinez Strait Regional Shoreline Looking Northwest From Franklin Ridge

-  PARK BOUNDARY
-  CREEKS & SHORELINE
-  HIGHWAY
-  TRAILS
-  MAJOR ROADS
-  PAVED ROADS

CARQUINEZ STRAIT 1992
EAST BAY REGIONAL PARK DISTRICT
PLANNING & STEWARDSHIP DEPARTMENT

SCALE EXAGGERATED THREE TIMES



B. WATER RESOURCES AND WATER QUALITY

1. Hydrology

The Carquinez Strait area is typified by rather abrupt and often steep elevation increases to the tops of the ridgelines creating narrow canyons and draws with gullies that act as drainage conduits for rainfall on the easterly and northerly facing slopes. These gullies drain to culverts beneath the Southern Pacific Railroad tracks directly into the Carquinez Strait.

Slopes facing Franklin Canyon on the south facing side of the ridgeline drain through gullies and tributaries of either Pinole Creek or Franklin Creek. Pinole Creek drains westerly to San Pablo Bay at the City of Pinole, whereas, Franklin Creek drains easterly and is tributary to Alhambra Creek. Alhambra Creek drains to the Carquinez Strait at the City of Martinez. Portions of both Pinole Creek and Alhambra Creek have been, or are being, considered for creek restoration by local cities and citizen groups. Efforts will include stabilizing channel banks, using biotechnical methods (primarily plants), improving the riparian habitat and appearance in downtown areas and considering these creeks for fish habitat improvement projects. However, the Carquinez parklands are only a small part of the watershed of these two creeks and well upstream of any proposed restoration efforts.

There are no consistent perennial surface waters within these parkland units. Several runoff and/or spring-fed stock watering ponds exist within the Port Costa Unit and Franklin Hills Unit, but these are small (largest $\pm 1/2$ acre) and subject to drying completely during below normal rainfall.

Some need dredging to re-establish adequate storage capacity.

Several low production springs are known to exist in the Crockett Hills Unit and Port Costa Units. Two springs within the Crockett Hills Unit have been partially developed to supply water to troughs for stock watering. However, both are in need of redevelopment and would benefit from lateral drilling to increase production. The third spring is on a slope near Port Costa, but has not been developed. Paucity of year-round fresh water sources may be a limiting factor for populations of wildlife species in the area.

A well with a windmill pump is functional at the old Schrader residence location property (Franklin Hills Unit). Faucets and piping for irrigation also exist there to serve the water needs of the residence site. Reliability of year-around water production and the depth of this well are unknown. This water could be used to maintain a small nearby pond created by an earthen dam across a gully to provide a source of water for wildlife.

2. Water Quality

Table I contains general mineral water chemistry for a single sample collected from a developed stock watering spring at the Crockett Hills Unit (Spencer Property) and for a single water sample collected from the windmill well at Franklin Hills (Schrader property). Both water samples were noticeably turbid in appearance when collected. The stock watering spring sample was fil

tered before conducting analyses, whereas, the windmill well sample was not. Both sources exceed drinking water standards (trough sample filtered to remove turbidity so not apparent in Table I) of 1.0 NTU turbidity and 0.05 mg/l manganese. Both sources appear to be satisfactory as stock or wildlife water supplies, but would require significant re-testing and re-development before consideration for limited drinking water supplies. Coliform bacterial testing was not performed.

Surface soil samples were collected at the Eckley townsite, Spencer property and White's Resort to screen for possible high levels of lead that have been known to exist at some properties downwind of the Selby smelting plant that existed at the westerly end of the Carquinez Strait years ago. Soil samples were tested for total lead and the results were:

42 mg/l - Eckley Townsite
61 mg/l - Spencer Property
9 mg/l - White's Resort

Although results were variable and may be somewhat elevated, County Health officials typically require remediation only when lead in soil exceeds 100mg/kg due to potential exposure and health concerns. Other potential problem areas of concern regarding sources of soil and/or groundwater contamination that could affect parkland uses include the former Tosco refined petroleum storage tank farm adjacent to Port Costa Clay Products and the 0Z0L Fuel Terminal. The Tosco storage tanks were removed and oil seeps attributable to leaks at the site have been the subject of a cleanup and abatement order by the local Regional Water Quality Control Board.

Since the site is now included in the parkland, Park District staff will periodically inspect the area to assure detection of any oil seeps in the future.

The 0Z0L terminal is a Department of Defense active petroleum product fuel storage site. The underground storage tanks at the site and/or associated piping have leaked product into the underground vicinity of the site. Corrective actions and further investigations currently are being negotiated with the local Regional Water Quality Control Board toward eventual remediation. Park property may be affected by subsurface groundwater contamination. Continued monitoring of the investigations and proposed remediation will be necessary.

TABLE I

Carquinez Strait Regional Shoreline General Water
Chemistry Characteristics of a Spring and Well Sample
July 23, 1992

Parameter mgl	Windmill Well (Schrader Property)	Water Trough Spring (Spencer Property)
Alkalinity Total	390	260
Alkalinity, Phenol	<10	<10
Chloride	110	85
Copper	0.06	0.14
Color (units)	<10	<10
Hardness, Total	450	330
Hardness, Calcium	250	200
Hardness, Magnesium	200	130
Iron	0.03	0.15
Manganese	0.095	0.45
Nitrate as N	0.4	0.7
Nitrate as NO ₃	1.76	3.08
pH (units)	7.1	7.5
Sulfate	140	120
Specific Conductance (10 ⁻⁶ mhos)	1970	1450
Turbidity (NTU)	0.58	5.6

3. Resource Issues

- Ground water contamination at Ozol terminal will require remediation by Regional Water Quality Control Board (RWQCB).
- Soil and ground water contamination could affect parkland use and shoreline recreation.
- Spring development is needed for livestock grazing.
- There is an inadequate supply of drinking water for park users.



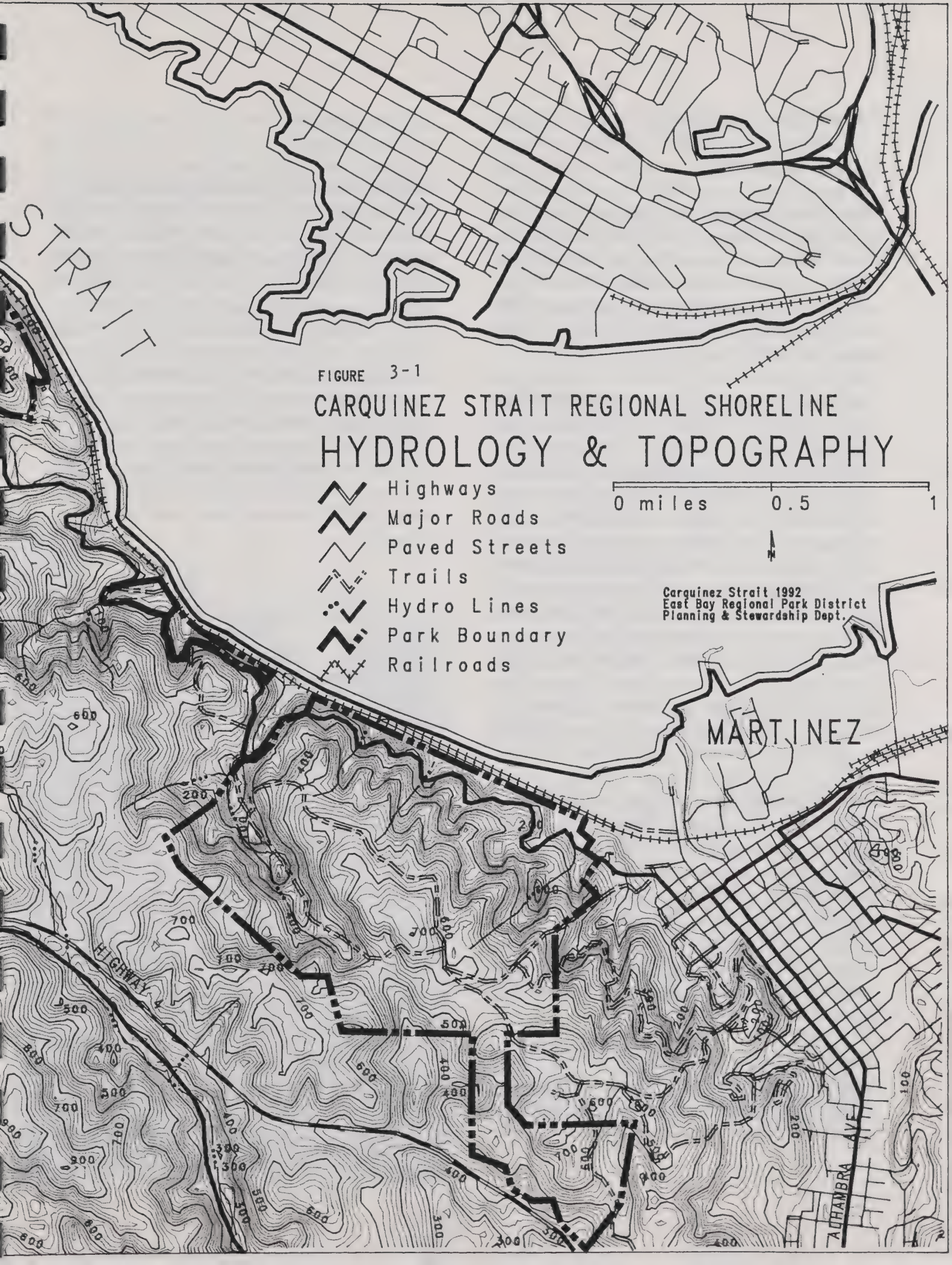


FIGURE 3-1
CARQUINEZ STRAIT REGIONAL SHORELINE
HYDROLOGY & TOPOGRAPHY

-  Highways
-  Major Roads
-  Paved Streets
-  Trails
-  Hydro Lines
-  Park Boundary
-  Railroads

0 miles 0.5 1

Carquinez Strait 1992
East Bay Regional Park District
Planning & Stewardship Dept.

MARTINEZ

ACHAMBA AVE

C. GEOLOGY AND SOILS

1. Regional Setting

The topographic characteristics of the District lands along the Carquinez Strait of the Sacramento River vary from rounded ridge tops to steep canyon slopes near the river's shoreline. Maximum relief is from mean sea level to 748 feet atop a knoll in the southern corner of the Franklin Hills Unit.

The bedrock geology in the project area has been mapped by T.W. Diblee (1980). His mapping indicates two discrete formations, the Upper Cretaceous Panoche and the Paleocene Martinez (Fig). The Panoche Formation, which mainly consists of micaceous shale with minor, thin sandstone beds (indicated as Kp on map), has a distinct arkosic sandstone bed (Kps) toward its northeastern contact in the Franklin Hills Unit. The Panoche shale beds, otherwise, predominate the project area except for the eastern segment of White's Resort and the northeastern slopes of the McNear and Sacchi properties where the claystones, siltstones and minor sandstones of the Martinez Formation can be found (Tmz).

Some small valleys in the Port Costa Unit, and the White's Resort and the northeastern portion of the Franklin Hills Unit have been mapped as Quaternary Alluvium. One large Quaternary Landslide is indicated along the northeastern shoreline, parallel to the Southern Pacific Railway, within the Port Costa Unit. Additional landslides have been mapped by others and are discussed in the slope stability section.

The Geologic structure throughout the Crockett Hills and Port Costa Units is indicated as relatively uncomplicated. The regional strike of the bedrock is typically northwest. The axis

of a syncline dissects the Carquinez Hills Unit in a similar northwest trending fashion. The regional bedrock dip in these two Units, north-east of the synclinal axis, remains southwestward to the shoreline of the Sacramento River.

The Franklin Hills Unit, however, is complicated by the Southhampton Fault. It cuts through the Panoche shale beds (Kp) in a northwesterly trend. The bedrock dips toward the southwest on the west side of the fault and in an opposing manner to the east. The arkosic sandstone beds (Kps) and the Martinez Formation (Tmz) have outcrops that range in dip from northeast, vertical to overturned.

2. Regional Seismicity

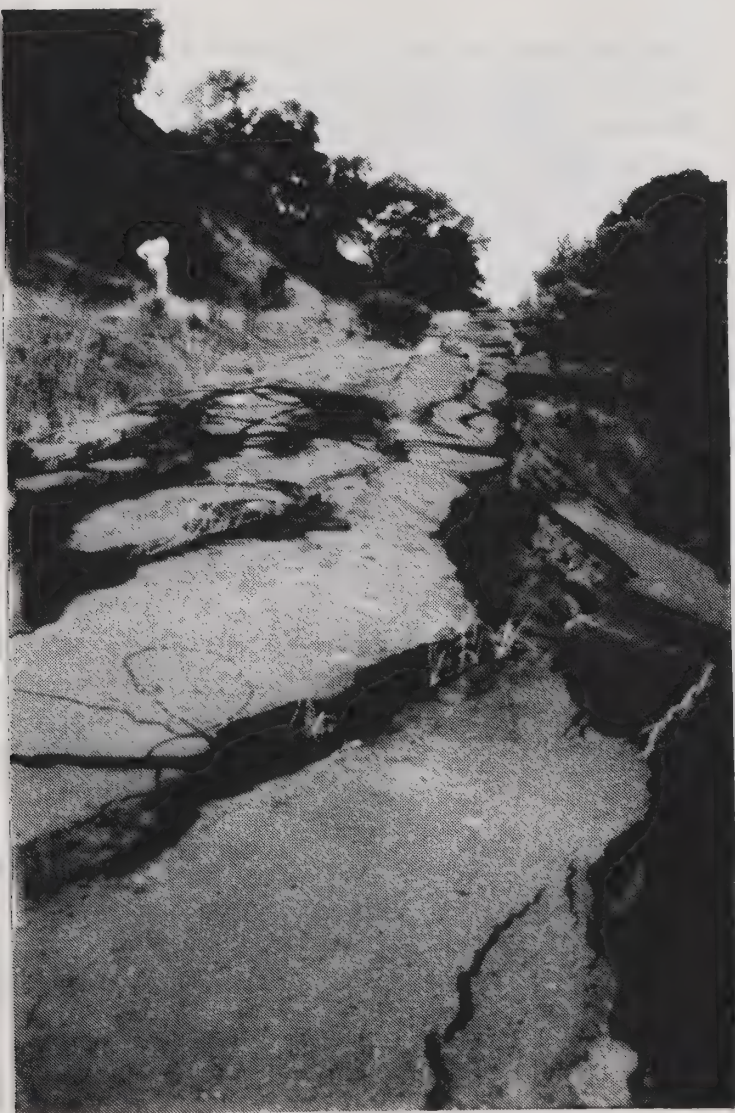
Any portion of the Bay Area is subject to seismic shaking, the degree to which is primarily dependent upon distance from earthquake epicenter and/or active fault trace, type of bedrock or fill, and the magnitude of the quake. Most seismic events in the Bay Area are generated along the active faults depicted in Figure 3-2, which include the San Andreas, Hayward, Calaveras, Concord and Antioch Faults to the South of the Carquinez Strait and the San Andreas, Rogers Creek and Green Valley Faults to the north.

Other faults in the vicinity of the project area are suspect of potential activity. These include the Pinole, Franklin, and Southhampton Faults to the south of San Pablo Bay and Tolay and Montezuma Faults to the north. The Montezuma Fault, a newly recognized fault is indicated by its microseismicity along a trend that runs northwestward through the vicinity of Pittsburg. A Draft EIR Report on

the Carquinez Shoreline Trail and Staging Area (EIP Assoc., 1988) discusses that the Franklin and Southhampton Faults are of particular concern with regard to their location and potential level of seismic activity. Diblee's (1980) geologic mapping indicates that the Southhampton Fault passes through the Franklin Hills Unit, while the Franklin Fault is less than 3000 feet from the southwest corner of the Crockett Hills Unit.

Taylor (1992) discusses that some geologic maps show the Calaveras Fault to continue northward along the Franklin Fault in the hills west of Walnut Creek, all the way to San

Landslide damage on Carquinez Scenic Drive



Pablo Bay, while other maps indicate its continuation up the alluvium-filled Walnut Creek and Concord Valleys or along the trace of the Southhampton Fault. The actual northern location of the Calaveras Fault to this date remains unresolved but may have some relevance to the project area.

Topozada (1992) suggests that the 1898 Mare Island earthquake, which had an intensity of VII or greater (interpreted by him to have a magnitude of 6.6) could have been centered on either the Rogers Creek, Franklin or Tolay Faults. The Rogers Creek Fault is the only fault currently recognized as active. But Schwartz et al (1992) believe that it is capable of generating magnitude 7 quakes, the last of which may have been during 1808. Although no definitive information exists to date on whether an earthquake will occur on one of these faults, the potential for displacement to occur along faults that are proximal to active faults is certainly possible. This has been indicated by field evidence from the Loma Prieta quake. Thus, caution is advised for any improvements crossing the Southhampton Fault in the Franklin Hills Unit.

The Hayward, Calaveras and San Andreas Faults are all capable of generating earthquakes larger than magnitude 7, the greatest of which would be from the latter, on the order of an 8.3 magnitude. Maximum magnitude quakes from any of these faults could cause sufficient damage to structures, foundations and utility lines, particularly those constructed upon nonengineered fill or upon bay muds near the shoreline.

3. Slope Stability

Mapping of landslides and other surficial deposits has been done previously by Nilsen

et al (1975). His analysis was based strictly upon photointerpretation. Shown on Figure 3-2, landslide deposits are indicated by arrows, while colluvial deposits that exhibit potential source areas for future slides are depicted as dark-shaded areas.

During the early 1980's numerous slides were activated within the boundaries of Nilsen's mapped slide deposits. A number of landslides have enlarged, particularly those occurring in the man-made cuts adjacent to the shoreline that were excavated for the Southern Pacific Railroad alignment. One particular slide system took out segments of Carquinez Scenic Drive just northwest of Ozol. Future slide activity along the length of the shoreline has the potential for depositing sediments upon the Southern Pacific right-of-way.

In general, future landsliding may be triggered either by long duration storms, short intense storms that occur when the soil is close to saturation or by seismic shaking.

4. Soils

The soils identified in the Contra Costa Soil Survey (1977) include the Series of Los Osos Clay Loam, Los Gatos Loam and Sehorn Clay. See Figure 3-2. These soils are all well drained and underlain by sedimentary bedrock.

The Los Osos Clay Loam is represented in the project area by two slope classes, those ranging from 15% to 30% (depicted as LhE on map) and 30% to 50% (LhF). Depending upon steepness of slope these soils exhibit medium to rapid runoff, and a medium to high erosion hazard where the soil is bare. This series is used for range, wildlife habitat, watershed and homesites. The degree and kind of limitations for local roads is severe due to low

strength and high shrink swell potential; for septic tank filter fields it is severe due to slope, slow permeability and depth to rock. Its suitability as a source for road fill is poor due to low strength, high shrink-swell potential and slope.

A small reservoir exists on this soil series in the southern Franklin Hills Unit. With regard to soil features affecting water retention, the embankments have low to medium shear strength and susceptibility to piping; medium compressibility, low permeability of compacted soil but fair to good compaction characteristics. Presently, little is known about the construction history or standards of the reservoir.

The Los Gatos Loam (LeG) is represented by 50%-75% slopes on the north-facing uplands. Its uses are similar to those of the Los Osos except for homesite development. It has rapid runoff and a high erosion hazard where soils are bare. Severe limitation exists for local road construction due to slope, and for septic tank filter fields due to slope, moderately poor permeability and depth to bedrock. Suitability for road fill is poor due to the thinness of the soil's horizon and the steepness of slope.

The Sehorn Clay (SdF) is limited to uplands in the 30%-50% slope class on ridges and hills. Its permeability is slow, yet water tends to run rapidly down cracks before the soil becomes moist, swells and then closes the cracks. Runoff is medium to rapid. The erosion hazard is moderate to high where the soil is bare. This soil type is used for range practices. The limitations for local roads and septic tank filter fields are severe for reasons similar to the Los Osos Series. Its suitability for road fill is similarly poor.

Undoubtedly, different soil conditions exist along the alluvial fans that were mapped by Diblee (1980) and along the shoreline, but the soil maps are not of sufficient scale to breakout these units.

5. Resource Issues

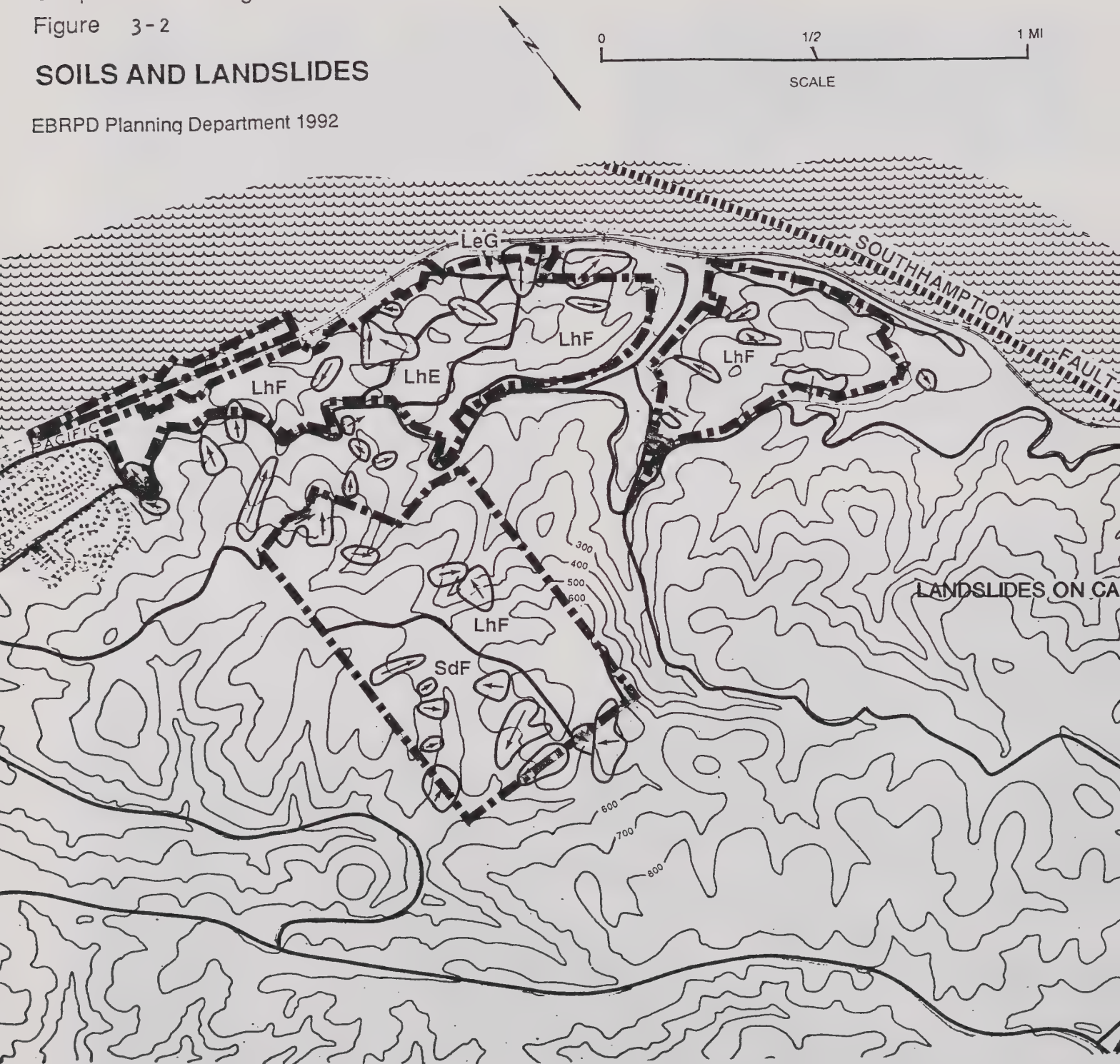
- Erosion, landslide and seismic hazards should be considered when constructing roads, trails and facilities.
- Soil conditions affect roads and trails during wet weather.

Hillside cuts made for railroad alignment



SOILS AND LANDSLIDES

EBRPD Planning Department 1992



LEGEND

- | | |
|--------------------------------------|--------------------------------------|
| ----- Fault | LhE Los Osos Clay Loam, 30-50% Slope |
| ⊖ Active Landslide | SdF Sehorn Clay, 30-50% Slope |
| LhF Los Osos Clay Loam, 15-30% Slope | LeG Los Osos Clay, 50-75% Slope |



D. BIOLOGICAL RESOURCES

1. Vegetation Types

The various properties of Carquinez Strait Regional Shoreline form part of a semi-contiguous expanse of private and public open space from Crockett to Martinez. The individual, scattered parcels of parkland that exist within this broader framework of open space contain representative segments of the grassland, coastal scrub, eucalyptus forest, and oak woodland plant communities that occur throughout this area. These plant communities occupy varying proportions of land on each of the different parcels comprising the public open space. The following discussion is an account of their occurrence and significance with respect to the individual units upon which they are found. See Figure 3-3.

Crockett Hills Unit:

This 240 acre area contains 150 acres of non-native grassland, 52 acres of oak/bay woodland, and 38 acres of coastal scrub. The open grassland that comprises the majority of the property is punctuated with scattered patches of coyote brush, *Baccharis pilularis ssp. consanguinea*. These plant communities extend into surrounding, undeveloped private land.

The non-native grassland is dominated by introduced, non-native annual grasses and forbs, which is typical of this plant community. Common non-native grasses include wild oats, *Avena fatua*; *A. barbata*, brome-grasses, *Bromus mollis*; *B. diandrus*, ryegrass, *Lolium multiflorum*, wild barley, *Hordeum leporinum*, silver hairgrass, *Aira caryophylla*, annual bluegrass, *Poa annua*, and dogtail grass, *Cynosurus echinatus*. Common introduced forbs include several species of filaree *Erodium*

spp., bur-clover, *Medicago polymorpha*, cat's ear, *Hypochoeris glabra*, English plantain, *Plantago lanceolata*, pepper-grasses, *Lepidium spp.*, and others.

Native grasses and forbs grow intermixed with the non-native flora. The grasses include needlegrasses, *Stipa pulchra*; *S. lepida*, wildryes, *Elymus glaucus*; *E. triticoides*, melicgrasses, *Melica torreyana*; *M. californica*; *M. imperfecta*, and junegrass, *Koeleria micrantha*. Native forbs occur primarily as spring wildflowers and include brodiaeas, *Brodiaea*, sanicles, *Sanicula*, lupines, *Lupinus*, clovers, *Trifolium*, owl clovers, *Orthocarpus*, mariposa lilies, *Calochortus*, mules ear, *Wyethia*, soap plant, *Chlorogalum*, yarrow, *Achillea*, farewell to spring *Clarkia*, and numerous others.

The steep, north-facing slopes associated with the two major drainages on the unit are dominated by coast live oak, *Quercus agrifolia*, bay laurel, *Umbellularia californica*, and buckeye, *Aesculus californica*. A relatively diverse understory of poison oak, *Rhus diversiloba*, coyote brush, hill gooseberry, *Ribes californicum*, and numerous native and non-native grasses and forbs are found in these areas.

Several individual populations of the rare western leatherwood, *Dirca occidentalis*, occur in the woodland of the northernmost drainage. Additional inventory work is needed to determine the extent of the plant's occurrence on the property. The transition zone of grassland, coyote brush, and poison oak along the common border between the upland grassy ridges and the oak/bay woodland is also home to the rare Mt. Diablo sunflower, *Helianthella castanea*. Known populations of this plant occur on park land and on adjacent private land to the east. Additional inventory



Grassland and eucalyptus above Port Costa

work is needed to determine the extent of this plant's occurrence on the property, as well. The unit contains a reliable spring, which has been developed for livestock use. Another intermittently active spring is located at the head of a drainage about 200 yards to the east. Serious, erosive head cutting is occurring nearby as a result of water diversions from the main road. An existing fenced enclosure around the source of the former spring will need to be expanded to include all of the associated wetland area. About 50 yards downstream from this site is an impenetrable thicket of arroyo willow, *Salix lasiolepis*. The thicket occupies the head of an ephemeral stream populated by coast live oak, bay laurel, and an occasional willow, that extends to the property line and continues across private land.

The Crockett Hills Unit has been grazed by livestock for over 100 years. The District, upon acquiring the property, has allowed this use to continue in order to maintain the grassland ecology and to minimize fire hazards. The park is grazed on a seasonal basis and is used in conjunction with adjacent private land. A range analysis report for the unit is included in the appendix.

Port Costa Unit:

Former Hivest/Bema and Maguire properties

The former Bema and Maguire properties comprise about 165 acres northwest of the town of Port Costa. The 110 acre former Bema property and a 15 acre upland portion of the former Maguire property constitute a range management subunit of approximately 90

acres of non-native grassland, 20 acres of eucalyptus woodland, and 15 acres of coastal scrub vegetation.

The grasslands support primarily non-native, annual grasses interspersed with assorted species of native grasses and forbs. Purple needlegrass, *Stipa pulchra*, foothill needlegrass, *Stipa lepida*, creeping wildrye, *Elymus triticoides*, and blue wildrye, *Elymus glaucus*, are typical native grasses found in the area.

Eucalyptus tree removal work was undertaken in 1989 to eliminate standing dead snags that had been burned in an earlier wildfire, and which were posing a safety hazard. Prior to this time the eucalyptus woodlands formed a dense thicket of trees. A

large amount of leaf and bark litter had accumulated on the ground surface, and understory vegetation was virtually absent. The eucalyptus have become re-established from stump sprouting, and presently occur in an open configuration of scattered, young trees, with an herbaceous understory of grasses and forbs. Subsequent treatment will be necessary to maintain these conditions.

A population of the rare Diablo sunflower, *Helianthella castanea*, occurs on the subunit. The plant often inhabits ecotone areas where one vegetation type merges into another. Here the plant is found in a setting in transition from non-native grassland to coastal scrub. Additional inventory work is needed to determine the extent of this plant's occurrence in the area.



The area is grazed by cattle on an intermittent basis. Grazing is used as a vegetation management practice to reduce fire hazards, maintain and enhance native plant diversity, and minimize the encroachment of coyote brush and poison oak into the grasslands. A range analysis report for the unit is included in the appendix.

The remaining western quarter of the former Maguire property, which extends along the road from the staging area on Carquinez Scenic Drive, through the old town site of Eckley, to Winslow Avenue, contains 40 acres of primarily dense coyote brush and eucalyptus forest. The flat area where the small community of Eckley was once located supports several cultivated species of trees and shrubs. This area is separated by fencing from the upland areas of the park, and is not grazed.

Natural sources of water are lacking on the 165 acres of park land west of the town of Port Costa. CCWD water lines along Carquinez Scenic Drive provide drinking water to permitted livestock.

Port Costa Conservation Society/Former Tosco Properties

The former Tosco property and the Port Costa Conservation Society land, which the District manages under an operating agreement, form a contiguous unit of open space between the town of Port Costa to the west and the Port Costa Materials land to the east. This unit is 90 percent grassland and 10 percent coastal scrub vegetation. The latter occurs in scattered patches on the unit. Young poison oak saplings are dispersed throughout the grassland.

Native perennial grasses are well-represented in the grassland community. In some areas of the unit purple needlegrass and foothill

needlegrass *Stipa pulchra*; *S. lepida* are the dominant grass species present. Extensive colonies of creeping wildrye, *Elymus triticoides*, occur in this area, often in association with the needlegrasses. There are no known species of rare, threatened, or endangered plants occurring on the property.

A shallow, ephemeral pond occupies the boundary between the two properties in the upland area of the subunit. A non-functional, developed spring occurs in the southwestern corner of the subunit.

The property was historically grazed, but has has not been grazed for several years. Isolated arson fires occur regularly. Management to maintain and enhance the existing native grass populations is recommended. This could take the form of prescribed burning, livestock grazing, mowing, or a combination of the above.

Franklin Hills Unit

White's Resort

This small 8.4 acre property incorporates the mouth of a rather extensive drainage system that extends well above parkland. The corridor through which water is channelled into the strait is populated by a dense assemblage of willow, elderberry, poison oak, coyote brush, oak, and bay laurel. The associated slopes support a blue oak savanna community on the south aspect of the drainage, and oak/bay woodland and coyote brush communities on its north aspect. There are no known species of rare, threatened, or endangered plants occurring on the property.

Former McNear, Shrader, Zuppan and Hempfling Properties

These properties form the largest contiguous unit of park land within Carquinez Regional

Shoreline. This 667 acre area includes 340 acres of non-native grassland, 223 acres of oak woodland, 86 acres of oak/bay woodland, 13 acres of coastal scrub, and 5 acres of eucalyptus forest. The terrain is characterized by a central grassy ridge surrounded by generally steep and dissected oak-covered hills.

This area contains plant species representative of non-native grassland, woodland, and coastal scrub plant communities. The oak woodland occurring on the unit's northern flank supports a very diverse complement of understory vegetation. Native grasses and wildflowers are well-represented. Several unusual and significant plant species, such as the western hoptree, *Ptelea crenulata*, nemophila, *Nemophila parviflora* var. *parviflora*, coast ellisia, *Eucrypta chrysanthemifolia* var. *chrysanthemifolia*, and others, are occasionally encountered in this woodland. Several valley oaks, *Quercus lobata*, occupy the small valley just beyond the west entrance gate off Carquinez Scenic Drive.

The unit contains several possible sites that may support the rare Diablo sunflower, *Helianthella castanea*. An inventory will need to be conducted to assess whether these, or other rare plants are present. The distribution of valley oak on the unit must also be determined.

All land within the Franklin Hills Unit south of Carquinez Scenic Drive is currently being grazed to reduce fire hazards, maintain and enhance native plant diversity, and minimize the encroachment of coyote brush and poison oak into the grasslands. The ungrazed portions of the unit include White's Resort and a narrow strip between Carquinez Scenic Drive and the Southern Pacific railroad tracks, where the dense vegetation does not lend itself to management by grazing. The former Shrader and McNear properties form a separate graz-

ing unit. Grazing is concentrated on the upland areas, with minimal use occurring in the steeper oak woodlands. The former Zuppan property is grazed in association with private and City of Martinez land to the east. A range analysis report for these areas is included in the appendix.

Natural water sources on the Franklin Hills Unit are generally scarce. The former McNear property contains three ponds. Two of the ponds are completely silted in, and the third retains water through the spring months before drying out. The former Shrader property includes a seasonal pond, and a well outfitted with a windmill. The former Zuppan property has two seasonal ponds. Water is present at the residence and bait shop at Whites Resort. The development of water resources on these collective properties can benefit grazing, wildlife, fire management, and equestrian uses.

2. Wildlife

Carquinez Straits Regional Park includes a variety of interwoven habitats stretching along the mouth of the Sacramento-San Joaquin delta. This parkland is at the head of many parallel ridges running southeast. The habitats in the park include a few isolated projections of shoreline, dwarfed by extensive ridglands to the south. There are northeast-facing slopes covered in oak and bay laurel and rolling hills of grasslands throughout the park. These areas combine with the existing private lands to form an extensive mosaic of habitats available to many varieties of wildlife species.

Habitat Types

Grasslands -- The grasslands cover the west facing slopes and the upper highlands of the park. These areas service hunting grounds for a variety of raptors, including golden



eagles, red tailed hawks, Northern harriers and black-shouldered kites. They can be seen searching for voles and mice in the lush grasses of the hillsides. Granivorous birds wander through the tall grass in search of seeds. They also catch the plentiful grasshoppers and other insects to supply their hungry young in the nesting season. Flocks of horned larks, Western meadowlarks, Western bluebirds and violet-green swallows forage in and above these grasslands. One burrowing owl also has been sighted using a culvert as shelter in the grasslands. Making an occasional meal of a ground-nesting bird, the gopher snake can be seen resting in the grasses or coiled like a rattlesnake. Deer and coyote forage on the wood's edge and usually appear in the evenings and early mornings.

Woodlands -- The wooded ridges of Carquinez Strait shelter many species of wildlife. Birds include songbirds of all varieties, owls and nesting hawks. Of particular interest is the Cooper's hawk, a California species of special concern, which nests in the dense north facing slopes of the park. A predator of birds, it preys upon scrub jays, plain titmouse, chickadees and juncos, vireos and towhees. The thick woods offer cover to raccoons, deer, foxes and squirrels. Scorpions, salamanders and snakes can be found under rocks and logs

Riparian Drainages -- The drainages running downslope towards the Strait are of significant value for most of the animals living in the park and tend to be the focal point of activity for foraging, nesting and breeding. These moist areas offer a refuge from the windy, sun-scorched hills, throughout the

entire year. Amphibians and reptiles, including Pacific Tree frog, slender salamander, alligator lizard and Western toads, breed in these areas. The willow-filled riparian drainage that descends to White's Resort is one of the best breeding areas for songbirds, including warblers, finches and towhees. This area also supplies habitat for breeding amphibians, and serves as a cryptic corridor for deer, raccoon, skunks and foxes.

3. Fisheries

The Carquinez Strait Regional Shoreline forms the southern bank of one of the deepest and narrowest sections of the Sacramento - San Joaquin estuary. This hydrologically complex estuary is California's largest, forming the passageway to the large network of Central Valley rivers, streams and sloughs.

The species of fish that may be found in the waters off Carquinez Strait range from marine to freshwater, estuarine anadromous, or species which overlap into two or more of these categories. Several species of fish may only be found here during very brief periods in their development.

The Carquinez Strait area has long been an area of intense sport and commercial fisheries activities. The Chinook salmon run was one of the largest on the west coast of North America and once numbered over 1 million adults (Delisle, 1966). Commercial and sport angling centers for salmon, sturgeon and striped bass became major sources of income for the developing cities of Martinez, Crockett and Port Costa in the early 1900s.

Attached is a list of fish species which have been collected in the Sacramento-San Joaquin Estuary and may be found in the waters offshore of Carquinez Strait.

Several species of fish which may be found off the Carquinez Shoreline are currently listed as "threatened" by the U.S. Fish and Wildlife. The winter run Chinook salmon (Oncorhynchus tshawytscha) which passesthrough the Strait as an adult on its way to spawning grounds on the Sacramento River and again as a smolt on its way to spend several years in the ocean, is currently threatened and being considered for "endangered" status. The Delta smelt (Hypomesus transpacificus) inhabits the slough areas in the Rio Vista area also can be found at times off the Carquinez Strait. This species also is being considered for elevated status from "threatened" to "endangered." Several other delta species are experiencing similar declines in population and are now being considered for listing. These include the longfin smelt (Spirinchus thaleichthys) and the splittail (Pogonichthys macrolepidotus).

Federal listing of these species affords increased protection in the form of changes in delta water diversion, more restrictive fishing regulations and special handling of hazardous materials in the delta zone.

4. Resource Issues

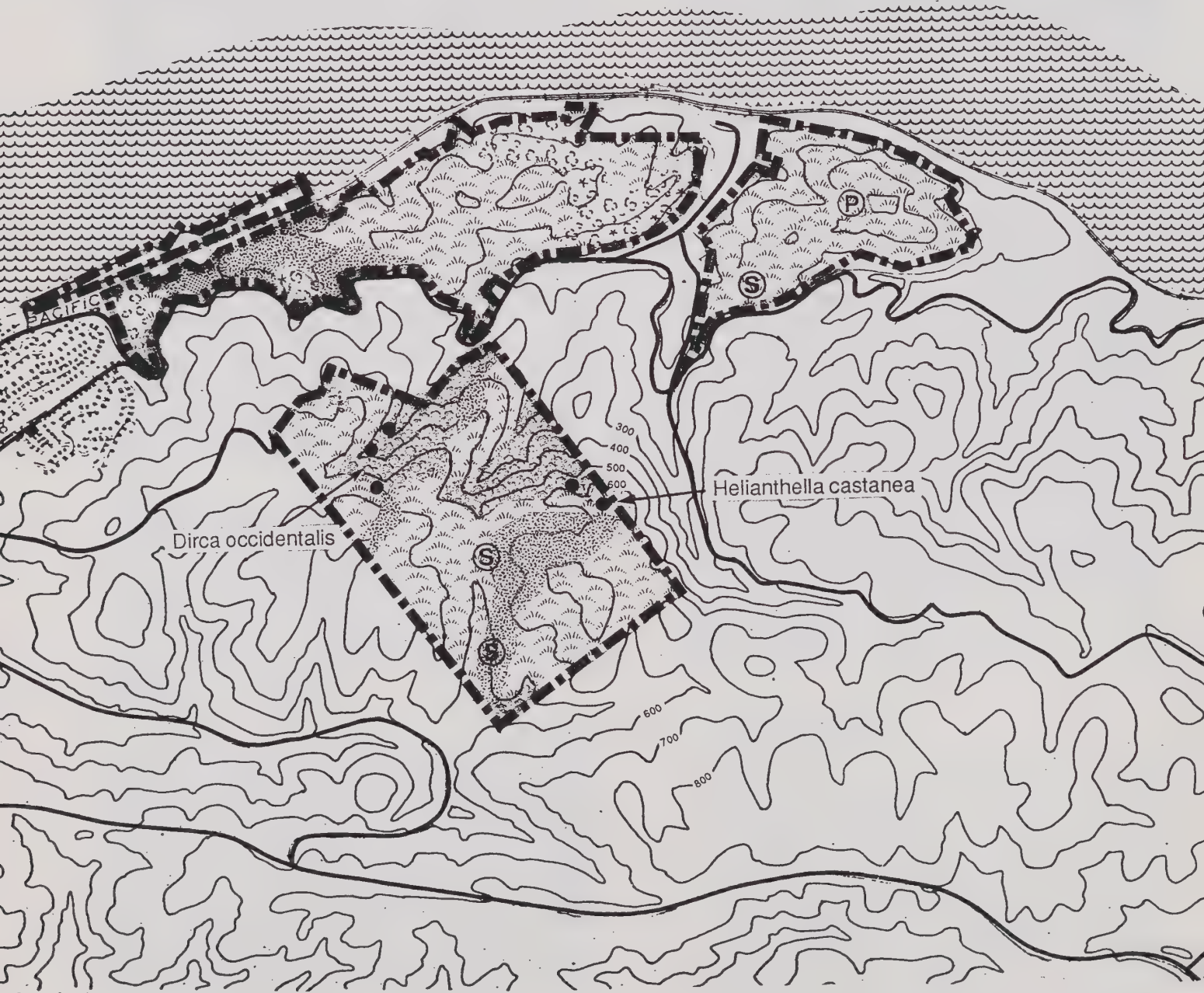
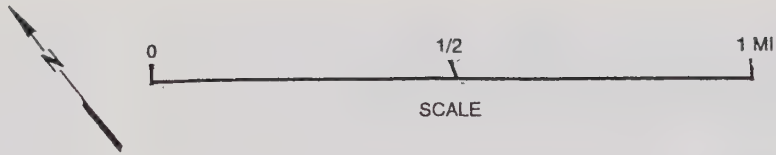
- In the absence of a mechanism to control herbaceous vegetation growth, most productive non-native grassland and some woodland understory sites accumulate large amounts of plant material, which acts as a mulch to diminish native herbaceous plant diversity and increase the risk of wildfire. Some sites may be subject to encroachment by weed and brush species, such as mustard, fennel, poison oak, coyote brush, and broom.
- The conservation and protection of rare plant populations on the park will require appropriate management that

addresses the individual requirements of the plants and their habitats.

- Appropriate management is necessary to preserve and enhance riparian and other wetland resources on the park.
- The fragility of the White's Resort drainage warrants concern for its continued protection, especially in developing public access to the fishing pier.
- Two animal species listed by the state as "species of special concern" have been found as residents of the park. The first is the Cooper's Hawk (*Accipiter cooperi*) which nests in the dense woodlands in the former McNear property. The other is the burrowing owl (*Athene cunicularia*) which has taken up residence in a culvert on the former Schrader piece. These sensitive species require continued protection from human disturbance and secure management of their habitat.

NATURAL RESOURCES

EBRPD Planning Department 1992



LEGEND

Grassland		Eucalyptus	
Coastal Scrub		Spring	
Oak/Bay Woodland		Pond	
Oak Woodland			



E. CLIMATE AND AIR QUALITY

1. Climate

The Bay Area, including the Carquinez Strait, is characterized by a Mediterranean climate. This is a well defined climate pattern dominated by maritime influences, particularly offshore high pressure areas which produce cool, moist, generally westerly winds over the land. At the coast, temperatures show little variation due to the stabilizing influence of the ocean; variations become greater as distance from the shoreline increases. At Carquinez Strait, the average daily high temperatures in the summer are in the mid-70's Fahrenheit (F), while the evening lows are in the mid-50's. During the winter months, daily high temperatures range from 60 degrees to evening lows in the mid-40's occasionally reaching freezing temperatures. Average annual rainfall is about 17-21 inches, falling mostly between the months of November and April. Frozen precipitation of any kind is unusual. Almost no precipitation occurs from late July through September.

Winds across the site are not affected by topography. The terrain provides virtually no obstructions or deflections. On shore winds typically sweep in from the northwest through the Golden Gate and Carquinez Gap. Prevailing spring and summer winds (when use of the park would be greatest) are from the southwest and west-southwest. Daily wind patterns are typical of the San Pablo Bay area -- gentle breezes in the early morning increasing to strong winds in the afternoon. Prevailing winds intensify during June through September due to the increased difference in air pressure over the ocean and Central Valley. The site is less susceptible to fog cover than other shoreline areas on San Francisco or San Pablo Bays. Fog pattern is typical of the Bay Area with fog burning off by late morning and returning in late afternoon.

2. Air Quality

Air quality is monitored and regulated, under state and federal law, by the Bay Area Air Quality Management District (BAAQMD). Concentrations of ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) are measured at 23 locations throughout the nine-county Bay Area. The Concord and Vallejo stations are reasonably representative of the air quality that exists at Carquinez Strait. For the year 1991, the Concord and Vallejo stations exceeded neither the federal nor the more restrictive state standard for CO, NO_2 and SO_2 . The state standard for O_3 was exceeded four times.

Conditions favoring creation of ozone generally occur during late summer and fall. Ozone conditions are significantly worse in those inland urban areas where high temperatures and unblocked sunlight are more prevalent than around San Francisco Bay. The most significant source of chemicals from which ozone is produced is motor vehicle exhaust. Increased traffic on Highways I-80 and 4 could result in increased ozone concentrations in the Carquinez Strait area.

3. Resource Issues

- Low seasonal precipitation and drying east winds combine to create hazardous fire conditions which could affect park use in the late summer and fall.
- Road or trail use during wet winter months may damage path surfaces and may cause erosion.
- Increased development and motor vehicle traffic may degrade air quality in the future.
- Strong and continuous wind may effect use of potential recreation sites.

IV. CULTURAL RESOURCES INVENTORY

A. ARCHAEOLOGICAL RESOURCES

1. Native American

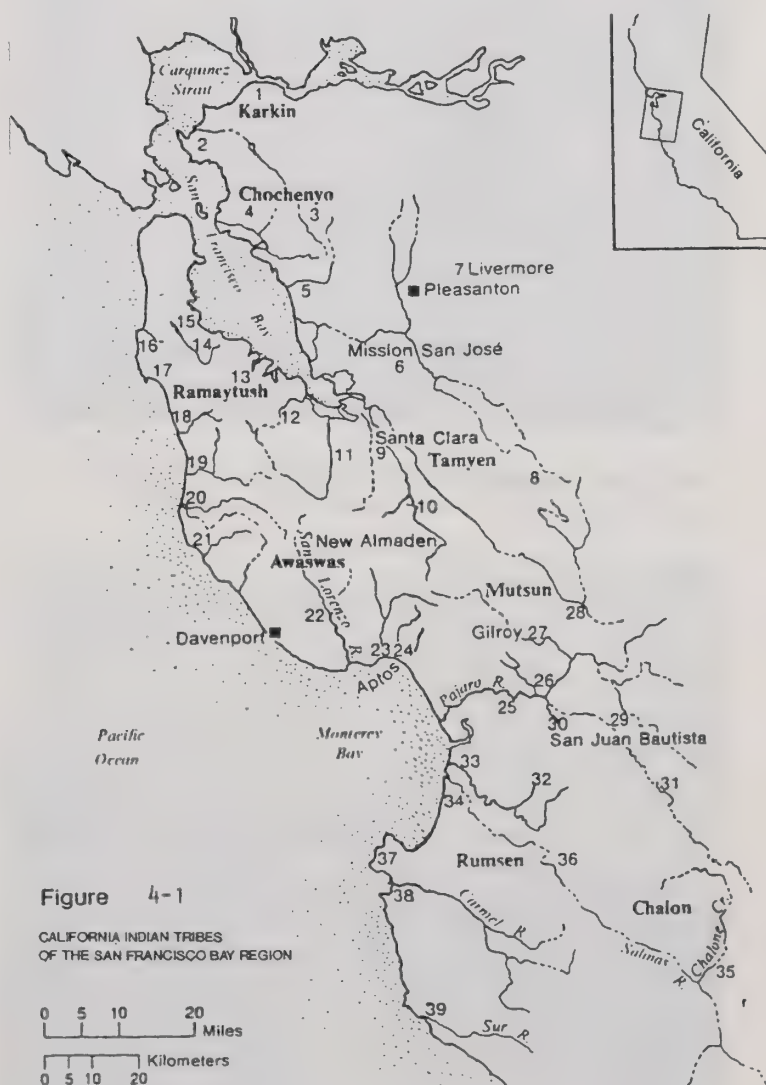
The land along the Carquinez Strait was once the tribal territory of the Karkin, a subgroup of the Ohlone Indians, who claimed most of Contra Costa County as their domain. See Figure 4-1. This group practiced a semi-sedentary life style, dividing their time between a central village and a cluster of seasonal camp and village sites spread over an area large enough to provide them with adequate hunting grounds, seed and acorn collection areas, shellfish and chert and basalt stone used in daily activities.

There are two possible locations of the main village of the Karkin. One site may have occupied the eastern edge of Crockett. The Karkins, who possibly controlled both sides of the Strait, may have had a main village in the Benicia area. In either case, it appears that the south shore of the Strait and the hills that extend over to Franklin Canyon were in an area primarily used for hunting and gathering, not for temporary camp sites or more permanent villages. The only prehistoric sites which have been recorded in the general vicinity of the southern shore of the Strait are at the Ozol Fuel Depot and on the edge of Rankin Park in Martinez. There may have been additional midden sites on either the western or eastern peripheries of the shoreline, in Crockett and Martinez, but historic development has either covered or removed them. The construction of the railroad effectively altered the entire southern shoreline between these two cities, probably eliminating shell middens in the process. This pattern of seasonal use of the shoreline and coastal bluffs continued into the 19th century until 1810 when the Karkin, as a group, had been removed to Mission Dolores. No indicators

of prehistoric use of this area were discovered during the literature review and archaeological field inspection in October 1991.

2. Euroamerican

The Euroamerican historic period in Contra Costa County began with the 1772 expedition of Pedro Fages and Juan Crespi to the Mt. Diablo area followed by the 1776 expedition of Juan Bautista de Anza and Father Pedro Font across Contra Costa County to the



confluence of the Sacramento and San Joaquin Rivers. What is now regional parkland was included in the 1842 Mexican land grant, Rancho Canada del Hambre. Teodora Soto, claimant for Rancho Canada del Hambre, was granted 13,312.7 acres by Juan B. Alvarado on May 18, 1842. In 1860 half of the land was sold to William Piper. John Eckley bought 374 acres of this land in 1870. (See section II.B Land Use History for a description of the settlement of Eckley and the development of the grain and shipping industry along the strait.)

Four relatively recent historic phases have been identified on the former Eckley townsite: 1) the Eckley homestead (c. 1870-1889); 2) the development of George McNear's grain warehouse (c. 1880-1942); 3) construction of the Carquinez Brick and Tile Company (c. 1880-1942) and 4) operation of a fishing resort (c. 1921-1970). Historic sites of varying types exist at several other locations in the park.

Eckley Townsite

Bull Valley is the name of the canyon that contains the former Eckley settlement just east of Crockett between the shoreline and Carquinez Scenic Drive. There are abundant

*Port Costa grain warehouses circa 1880
(courtesy of Contra Costa County Historical Society)*



Eckley townsite ruins, brick office building and grain warehouse

remains of historic occupation and use at this site. Existing structures remain from the grain warehouse, brickworks and fishing resort. The grain warehouse, house and office, built by the Granger's Business Association sometime between 1880 and 1889 are considered historically significant. These buildings are located along the water's edge, north of the railroad tracks. Despite extensive fire damage to the warehouse itself, the charred wood pilings still supporting the building's structure over the waters of the Strait conveys to observers the original appearance and feeling of the place. Also evoking the presence of early industrial activity on this site is the one-story brick building used to house the office of the Carquinez Brick and Tile Company. The single rectangular room of the building has exterior walls which reveal the variety of effects the company's product could produce. The burnt remains of the ferry "Garden

City" are submerged off-shore from Eckley. Built for the Southern Pacific Railroad in 1879, the "Garden City" was a double-ended sidewheel ferry which carried freight cars and passengers first between San Francisco and Alameda, and later between Vallejo and Vallejo Junction. In 1934 it was deliberately sunk off-shore Eckley by Michael Hallissy who purchased the ferry and remodeled it to accommodate living quarters, a bar, a dance floor and an office for a sport fishing business. Left to deteriorate after the decline of the sport fishing business, the "Garden City" burned in 1983.

Three residences and several buildings associated with the fishing resort phase of the site (dating from the 1940's) were demolished by EBRPD when the Maguire parcel was acquired in 1988. These buildings had been used as residences since the early 1970's and were considered attractive nuisances in their dilapidated condition. A building survey by a qualified architectural historian determined that they offered no or insignificant architectural or historical interest.

The grain warehouse, house and office ruins are historically significant and may be eligible for the National Register of Historic Places. These buildings have "survived with only minimal changes to their architectural fabric and so maintain the integrity of design, materials and workmanship required for a National Register nomination." (Eckley Townsite evaluation report 1989.) The brick office building and the remains of the ferry "Garden City", and the snack bar from the fishing resort have not been deemed "historically significant". However, this group of buildings provides physical evidence of changes that have occurred on the site over time, and so have meaningful interpretive value for the history of the strait's economic development.

The warehouse is associated with the grain shipping operation that dominated the shoreline from the 1880's to the 1930's and contributed to the economic growth of Northern California. The ferry "Garden City" is of historical interest as a reminder of the ferries which plied the strait for a half a century before the Carquinez and Benicia bridges were built. The snack bar has some historical interest as evidence of the site's use as a fishing resort. The brick building provides both historical and architectural interest. Both of these buildings are in good condition and could easily be converted to park uses.



Carquinez Brick and Tile Company office building

Tosco/Port Costa Conservation Society Parcels

These properties were formerly owned by the Time Oil Company and Tosco Corporation. Historic alteration of these sites occurred where containment basins were once graded and tanks were constructed for oil storage. These have long since been removed, leaving the tank sites, containment berms and scattered brick debris and concrete at the edges of these locations.

White's Resort

White's Resort was built about 40-50 years ago as a riverside resort, and included a boat dock and fishing pier built over the water. Other buildings on the site include a bait shop/snack bar, sheds, out-buildings and a single family residence located inboard of the railroad tracks. These buildings have little historical or architectural significance. However, White's Resort does contain a unique historic feature. Over the years of operation of the Resort tons of brick were hauled in and used to pave the road leading from the cluster of shoreline buildings up a small canyon, eventually turning south to a clearing. The visible portions of this paved road show a combination of overlapped dry laid brick merging at points into a herringbone design. This section of paved roadway is probably the longest intact brick road in Contra Costa County.

3. Resource Issues

- Evaluate the grain warehouse and ferry "Garden City" ruins and brick office building for restoration and public interpretation.
- Evaluate the brick road at Whites Resort for preservation and protection.
- Recognize the abundant physical evidence of California's grain shipping operation and other water related history (fishing resorts, ferries) along the Strait in the planning and interpretation of this park.
- Evaluate the brick office building and Eckley snack shop for conversion to park uses.

3. ACCESS, CIRCULATION AND TRANSPORTATION

1. Existing Roadways

The main entrance to Carquinez Strait Regional Shoreline is located on the eastern end of Carquinez Scenic Drive, a two lane county maintained public road. This entrance is the Nejedly Staging Area. Interstates 80 and 680 are major north-south routes providing access from both east bay shoreline cities and the towns of Central Contra Costa County. The Alhambra exit off the John Muir Parkway (Highway 4) provides local access from Alhambra Avenue and Carquinez Scenic Drive. Access to the main park entrance from this exit requires taking Alhambra Avenue north through Martinez to Escobar Street and Talbert which becomes Carquinez Scenic Drive. See Figure 4-3.

The Bull Valley Staging Area located on the western portion of Carquinez Scenic Drive, provides access to the west end of the park. This entrance can be reached by taking the Crockett exit from Interstate 80 and following Pomona Street until it becomes Carquinez Scenic Drive. Carquinez Scenic Drive is no longer a thoroughfare between these park entrances because of two landslides that damaged this road in 1983. Dupuru Street, a residential street in Crockett, connects Pomona Avenue to a subdivision adjacent to the Crockett Hills Unit of the park. There is no developed public entrance to the park at this location.

2. Trails and Interior Roads

Circulation routes within the land units of the park consist primarily of existing, graded service roads. See Figure 4-3. The location of these routes has been determined by topography, with ridgecrests

being the main interior circulation routes. All trails are suitable for pedestrian, equestrian and bicycle use, although travel of any type is difficult during the rainy season on the steep slopes of the Franklin Ridge. One primary trail system originates from the Nejedly Staging Area and encircles the Franklin Ridge connecting with a network of other trails including the Rankin Park Trail and the California Riding and Hiking Trail. Another group of trails begins at the Bull Valley Staging Area and forms a loop around the Port Costa hills and descends into the town. Internal roads leading to the former Eckley townsite and White's Resort are serviceable as trails but may not be suitable as public access roads. They are both single lane roads poorly drained, narrow and steep. Two service roads traverse the ridgetop of the Port Costa Conservation Society land and the eastern portion of the former Tosco property. This part of the Port Costa Unit has not been open for public use. The Crockett Hills Unit, formerly the Spencer property, is located at the end of Dupuru Street in Crockett and also lacks appropriate public access. The parkland is on the uphill side of Carquinez Scenic Drive and a single dirt fire road provides circulation through the site. This site is physically separate from the rest of the park. There are no trails connecting it to other areas of the park.

Carquinez Strait Regional Shoreline is a key location for two major regional trail systems; the San Francisco Bay Trail and the Ridge Trail. The Ridge Trail will surround the bay along the ridgetops, crossing from the north bay to the east bay at Carquinez Strait Regional Shoreline. The Ridge Trail corresponds

to the California Hiking and Riding Trail as it travels through the eastern edge of the Franklin Hills and connects with the National Park's historic John Muir House. The Bay Trail will ring the San Francisco Bay linking the shoreline, parks and cities of the nine bay counties. See Figure 4-2. The Bay Trail follows Carquinez Scenic Drive along the northern edge of the east bay. Portions of Carquinez Scenic Drive were closed in 1984 because of landslide damage leaving only small sections of the highway at both ends open for automobile access. The Ozol Fuel Depot is the sole destination that generates traffic along the east end of Carquinez Scenic Drive. EBRPD is working with Contra Costa County and the Department of Defense to consider closing

the east end of Carquinez Scenic Drive to automobile traffic on weekends to promote recreational use of this road as a public trail. The Bay Trail converges with the Ridge Trail at the Nejedly Staging Area.

The District is also pursuing an agreement with Port Costa Materials to provide a trail connection across this industrial site. Contra Costa County has granted the Brickworks a Special Use Permit for the expansion of its quarrying operation. According to a condition of the use permit, Port Costa Materials is required to permit a trail easement across its site to White's Resort.

Nejedly Staging Area



3. Parking

Developed parking areas exist at two locations in the park. The Nejedly Staging Area near Martinez, is considered to be the main entrance at Carquinez Strait Regional Shoreline provides approximately 20 spaces in the lower level and 10 spaces for equestrian trailers on the upper level. The lower level is frequently filled to capacity during weekend use and the upper level is often empty. The upper level is signed exclusively for equestrian use although it would be able to handle some non-equestrian overflow parking. At the west end of the park, the Bull Valley Staging Area is limited to 14 cars. This parking lot is located higher on the coastal bluffs than the Nejedly Staging Area and is popular with hikers who are unable to make the steep ascent to the ridgetop above the Nejedly Staging Area. Bull Valley Staging Area is occasionally overcrowded on weekend peak use periods. Parking facilities are not available at the Port Costa Unit east of the town of Port Costa nor are they available at the Crockett Hills Unit above Carquinez Scenic Drive. There are also no developed parking areas adjacent to the shoreline. Other local parking areas exists at the City of Martinez' Rankin Park, directly bordering the eastern boundary of the park. This established parking and recreation facility serves residents of Martinez and also links visitors to trails within Carquinez Strait Regional Shoreline.

4. Public Transportation

The BART system forms the backbone for the public transportation system in Alameda and Contra Costa Counties. The Richmond Station to the southwest and the Concord Station to the southeast of the park serve as connecting points for bus service to Crockett and Martinez. Park visitors from the Concord/Walnut Creek/Pleasant Hill area can use the

County Connection Routes #108 and 118 which originate from Concord BART and stop at the Martinez Amtrak Station. Route #116 starts at the Walnut Creek BART Station, continues to the Pleasant Hill BART Station and stops at the Martinez Amtrak Station. Portions of these routes go within a half mile of the Nejedly Staging Area. The Amtrak Station destination in Martinez is almost a mile from the Nejedly Staging Area. However, the railroad tracks pass below the entire length of the parkland area.

The Alameda-Contra Costa Transit District (AC Transit) Line #74 travels the San Pablo Avenue corridor from the Richmond BART Station to Crockett, serving the communities of San Pablo, Pinole, Hercules, Rodeo and Crockett. Bus line #74 stops on Pomona Avenue, one half mile from the Bull Valley Staging Area. AC Transit provides service to northwestern Contra Costa County under contract with the Western Contra Costa Transit Authority (WestCAT). Dial-A-Ride is furnished by WestCAT for the communities of Port Costa, Crockett, Rodeo and Hercules. WestCAT Route 30Z offers public transportation from Richmond along the John Muir Parkway to the Amtrak Station adjacent to the Martinez Regional Shoreline Park.

The Eastern Contra Costa Transit Authority or "Tri-Delta Transit" serves the communities of Pittsburgh, Antioch, Oakley and Brentwood. All routes connect with the BART Express bus system. Route 385 provides service to the Amtrak Station in Martinez. BART Express Route ME provides service from the Concord BART Station to the Martinez Amtrak Station. Future expansion of the BART system and stations to Pittsburgh and Antioch will enable BART to work with local transit authorities to expand bus service along the Highway 4 corridor.



California Riding and Hiking Trail

The East Bay Regional Park District's "Parks Express" program provides pre-scheduled transportation to all of the regional parks for non-profit, "special population" groups such as seniors, physically and emotionally handicapped and the economically disadvantaged citizens. The program operates from mid-June through October and groups may reserve either a bus or a wheelchair van.

5. Resource Issues

- Evaluate Carquinez Scenic Drive week end road closure for recreational use.
- Develop trail connections to other parks; Martinez Shoreline, Rankin Park and neighboring open space.
- Consider provision of additional staging areas at the Port Costa and Crockett Hills Unit.
- Evaluate developing parking facilities in association with new water-related or other recreation facilities at the Eckley town site and White's Marina.
- Expand or redesign automobile facility at the Nejedly Staging Area.
- Improve internal trail circulation in Crockett Hills Unit.
- Consider provision of boat landings for water access and ferry service at Eckley and White's Resort.

EXISTING FACILITIES & CIRCULATION

EBRPD Planning Department 1992





C. RECREATION FACILITIES AND USAGE

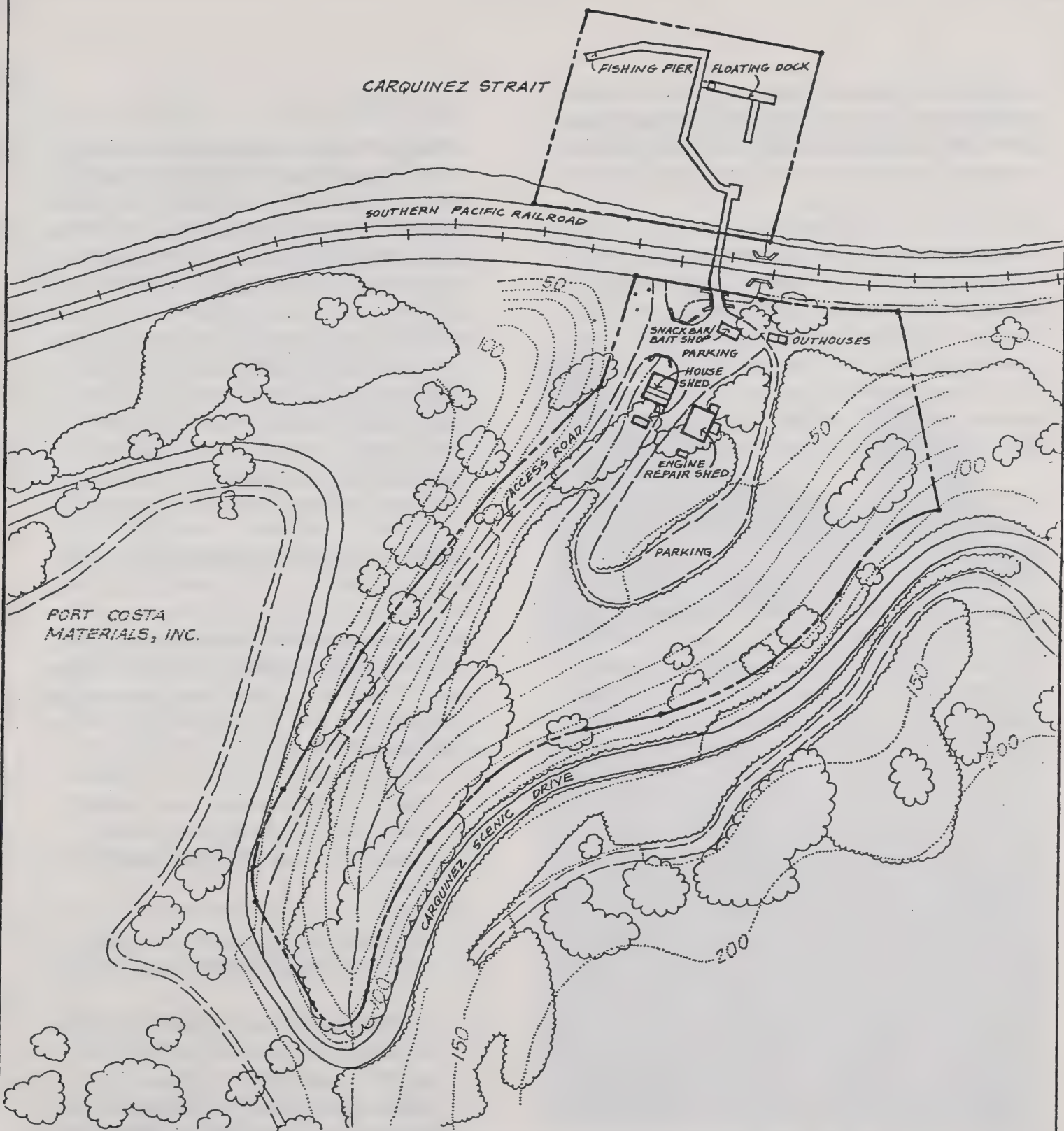
Carquinez Strait Regional Shoreline has been open for public use since EBRPD acquired this parkland in 1988 and 1989. Two Interim Use Plans were prepared and implemented in 1988 and 1990 to provide "interim public access for an acquisition prior to the land use-development planning process". At that time, existing trails were named and two staging areas were developed; the Bull Valley staging area and the Nejedly staging area. These two facilities provide parking, restrooms, information boards and access to trails. There are several picnic tables at the Nejedly staging area. There are no other picnic sites, restrooms, water fountains, interpretive, or facilities of any kind located elsewhere in the remainder of the park.

A unique feature of Carquinez Strait Regional Shoreline is the remains of water-related structures originally built for resort and recreation activities. Sport fishing and boating flourished at both the Eckley townsite and White's Resort where the shoreline bristles with the vestiges of fishing piers, pilings and boat docks.

WHITE'S RESORT. White's Resort is a former riverside business covering approximately 8.4 acres of land located east of Port Costa Materials. See Figure 4-4. Access is via Carquinez Scenic Drive which is presently closed in the vicinity of the resort due to landslides on the east and west sides of the service road to the site. The landslide blocking Carquinez Scenic Drive east of White's is of such a large scale that repair is not feasible. The slope failures to the west of White's can be

Piers and warehouse ruins at Eckley





WHITE'S RESORT
CONCEPTUAL SITE PLAN
EXISTING CONDITIONS

Figure 4-4



East Bay
 Regional Park District

----- APPROXIMATE LEASE LINE

NO SCALE

repaired or bypassed. Thus future access will be available from the west side of Carquinez Scenic Drive with McEwen Road providing the link between Carquinez Scenic Drive and Highway 4.

The resort is at the bottom of a steep wooded ravine that opens into a gently sloping valley. The resort includes a cluster of delapidated buildings that date from the 1930's; a fishing pier/boat dock, a bait shop/snack bar, a single family residence and several out-buildings. See Figure 4-4. An on-grade railroad crossing connects the upland valley to a rickety pier standing in the deep water of a locally popular fishing spot.

ECKLEY. Eckley is also located at the bottom of a wooded drainage called Bull Valley. This site is larger (67 acres) than White's with more flat land adjacent to the shoreline. A narrow one lane access road descends from Carquinez Scenic Drive to a clearing by the water. The open meadow area is fenced along the shoreline, bounded by steep coastal bluffs and landscaped with eucalyptus trees and other ornamental plantings. The shoreline north of the railroad tracks is a mixture of mudflats, a sandy beach cove and a lovely strip of tree shaded land rapped with brick from the Carquinez Brick and Tile Company. Dozens of wood pilings stand as sentries offshore. The dynamic local history of the Carquinez Strait is vividly in evidence with the enduring ruins of the Port Costa warehouse and Garden City ferry. These relics continue to attract history enthusiasts and railroad and maritime aficionados.

Given the site's relatively new use as a regional park and its interim use facilities, Carquinez Strait appears to be evolving into a favorite destination for local visitors from Crockett, Port Costa and Martinez as well as for people from across the bay in Vallejo, Fairfield and even Marin. The park's location as a nexus for the Bay Trail and Ridge Trail ensures its continuing popularity for pedestrians, bicyclists and equestrians.

1. Park Use

Little park user information was available relating specifically to Carquinez Strait Regional Shoreline. The most immediate method of gathering information was for District staff to prepare a questionnaire (User Survey) and conduct on-site interviews with people as they entered the park. A questionnaire (a copy of the questionnaire is contained in Appendix F) was prepared to elicit responses from both local and regional park users in order to prepare a plan best suited to the needs of park visitors. The questionnaire included direct questions as well as opportunities for noting preferences.

User surveys were conducted on four weekend days (May 16, 30, June 27, 28, 1992) during high use period in the spring. Two days were spent collecting information at both the Nejedly and Bull Valley staging areas. Key findings from this questionnaire are listed below (a total of 85 people were interviewed):

- Visitors were predominantly white (94%), between the ages of 36-55, female (82%), and English speaking (93%).
- Activities most frequently reported included hiking and bicycling.
- Drinking water and picnic areas were the most frequently requested park improvements (48%), followed by water access (45%), fishing pier (27%) and interpretive features (21%).
- Other requests included: trees, trails, playground, swim areas, restrooms, benches, sailboarding, snack shop, mileage markers, camping, miniature golf and more car parking.

- Most individuals visit the park several times a week in groups of two or more. Fifty percent of the respondents at the Nejedly staging area were from the adjacent city of Martinez. Bull Valley staging area draws 50% of its visitors from Port Costa and Crockett. Other visitors came from Concord, Lafayette, Moraga, Piedmont, San Jose, Walnut Creek, Vallejo, Benicia, Marin, Hercules, Oakland, Pinole, Richmond, Rodeo, Sausalito, San Pablo, San Mateo, Pleasant Hill and San Francisco.
- Twice as many people enter Carquinez Strait Regional Shoreline at the Bull Valley staging area than at the Nejedly staging area.
- Tilden, Briones and Martinez Shoreline were the other regional park most visited.
- The park's location was the key attraction followed by views, trails, open land, proximity to the shoreline and lack of traffic.

2. Resource Issues

- Consider restoring shoreline related facilities (boat docks and fishing piers) to Eckley and White's Resort.
- Identify suitable locations for family picnic sites and drinking fountains.
- Provide for the interpretation of: the historical and archaeological use of the area; the hydrodynamics of the Northern California watershed; the importance of the Strait to the bay and delta.



Beach at Eckley

D. SERVICE FACILITIES AND UTILITIES

1. Police Protection

Carquinez Strait Regional Shoreline receives full police services from EBRPD's Public Safety Department, the primary law enforcing authority for the parks. City of Martinez police are capable of providing a three to five minute response time to most areas within Carquinez Strait. Martinez police patrol the area to the east of the Nejedly staging area and the Contra Costa County Sheriff's Department provides services to the unincorporated towns of Crockett and Port Costa within and to the west of the park. The California Highway Patrol has jurisdiction on roadways in unincorporated portions of the county. The Contra Costa Sheriff and the Coast Guard patrol the waters of the strait, providing emergency rescue assistance. The open parklands along the ridge are also patrolled by the District's helicopter.

A three year review of law enforcement incidents at Carquinez Strait indicate mostly minor ordinance violations. The majority of incidents occurred along Carquinez Scenic Drive. They include curfew and alcohol violations, trespassing, abandonment of vehicles and other debris. Public safety issues have been minimal since the park opened in 1990. This is the result of increased park field staff and public safety patrol. Public safety concerns center on accidents along the winding roadway of Carquinez Scenic Drive, the railroad tracks and the hazards created by the remaining shoreline structures. The existing level of Public Safety service to Carquinez Strait is adequate for the present level of park use.



Residence at Eckley Shoreline

2. Fire Protection

Fire protection services are provided by four agencies in the vicinity of Carquinez Strait Regional Shoreline. The EBRPD maintains a firefighting unit responsible for fire protection on regional parkland and other properties through mutual assistance agreements with Consolidated Fire of Contra Costa County, the California Department of Forestry and the Crockett Carquinez Fire Department. Consolidated Fire of Contra Costa County provides initial response (within three to five minutes) to medical and fire emergencies in Martinez. The Crockett Carquinez Fire Department responds to emergencies occurring in the west portion of the park. The open wildlands also fall within the state's area of responsibility for the California Department of Forestry.

The land along the south shore of Carquinez Strait has a history of fires dating back to the massive warehouse fires of the turn of the century. The continuous winds gusting up the strait and the dry grasslands of summer

combine to make fire a constant threat in this area. Other key factors affecting the degree of wildfire hazard are atmospheric humidity, slope steepness, exposure to sun, wind speed and direction, accessibility to human activities and firefighting equipment. Every year approximately two or three arson fires plague this area. Fires also occur frequently along Highway 4 because motorists ignite the dry grass with cigarettes tossed from their cars. Grassland fires are easily kindled, particularly in dry seasons. These fires are relatively easily controlled if they can be reached by fire equipment. Recent fires occurring in or near the park are:

- | | |
|------|---|
| 1983 | the "Garden City" ferry burned |
| 1988 | eucalyptus groves on
parkland to the west
above Port Costa burned |
| 1991 | two small fires burned near
the Ozol Fuel Depot |
| 1992 | Nevada dock burned |

To reduce fire hazards to the park and neighboring lands, all grasslands within the park are grazed on a seasonal basis according to the District's "Wildlands Guidelines for Fire Management." Dirt fire roads are graded annually to provide access for emergency vehicles and to act as fuel breaks during a fire. Adequate water supplies for firefighting are located in Martinez, Crockett and Port Costa. A well with a windmill pump is functional in the Franklin Hills Unit of the park.

3. Water Service

There are no domestic water services supplied to Carquinez Strait Regional Shoreline. Contra Costa County Water District (CCWD) maintains water lines located next to the Southern Pacific railroad tracks. Natural water resources in the park are generally scarce. Mostly low production springs and shallow

ponds exist within the park. A functional well with a windmill was developed on the Franklin Hills Unit. Well water also exists at both White's Resort and Eckley. These water supplies are considered unsafe because sewage disposal on site has been by cesspool with overflow into the surface water course. There is presently no available water for human consumption for visitors to Carquinez Strait Regional Shoreline.

4. Sewer, Wastewater and Drainage

There are no sewer or wastewater facilities in Carquinez Strait Regional Shoreline. Sewage disposal at Eckley and White's Resort is by cesspool. A pit toilet is located at the former Shrader property. The service area for Central Contra Costa County Sanitary District ends at the City of Martinez' Rankin Park. The western edge of the park falls just outside of the services provided to the town of Crockett by the West Contra Costa County Sanitary District.

5. Electricity, Telephone and Gas

Electricity and telephone services are provided by overhead lines at Eckley and White's Resort and the former Shrader property. A natural gas tank is also located at White's Resort.

6. Park Service Yard

There is no District service yard at Carquinez Strait Regional Shoreline. The park is serviced by District field staff housed at the maintenance yard located in Martinez, less than one mile from the Nejedly staging area.

7. Resource Issues

- Remove or rebuild piers to reduce safety hazards.

- Identify critical fire hazard areas along park boundary and plan strategies to handle fires.
- Evaluate impact of Carquinez Scenic Drive road closure in the reduction of car accidents and public safety violations.
- Develop water resources in the park to benefit wildlife, fire management and equestrian use.
- Develop drinking water facilities at staging areas and new recreation facilities for park users.
- Remove or upgrade unsafe cesspool at White's Resort prior to public use.

E. OWNERSHIP, EASEMENTS AND LEGAL AGREEMENTS

1. Ownership of Park Land

The groundwork for the formation of the Carquinez Strait Regional Shoreline was made in 1982, when the Time Oil Company gave the Port Costa Conservation Society seventy nine acres on the east side of Port Costa as permanent open space. The District responded to the movement to preserve the scenic hills overlooking Carquinez Strait with the purchase of 147 acres from the Hivest/Bema Corporation in 1985. Two additional acquisitions were made in 1986 and 1987. The passage of Measure AA in 1988, the Open Space, Wildlife, Shoreline and Park Bond earmarked \$4.1 million dollars to acquire park land between Martinez and Crockett. Four acquisitions have subsequently been completed with AA funds. The park currently totals approximately 1077 acres. The following is a list of acquisitions to date: See Figure 4-5.

1982	Port Costa Conservation Society	79 acres
1985	Hivest/Bema	147 acres
1986	Sacchi	19.2 acres
1987	Maguire	67 acres
1988	Spencer	270 acres
1988	Tosco	29 acres
1989	McNear	452 acres
1989	Hempfling	4.4 acres
1991	White's Resort	8.4 acres
1992	City of Martinez	1.0 acres
1992	Fowler	4 acres

2. Easements

A total of 36 easements crisscross underneath and overhead Carquinez Strait Regional Shoreline. The easements are listed by their former parcel name:

Hivest/Bema. 2 gas, 1 oil,

1 sanitary sewer

Maguire. 1 water, 4 gas, 4 telephone and electricity, 2 cable, 1 unknown

McNear. 2 gas, 1 oil

Port Costa Conservation Society.

1 gas, 1 oil, 1 oil and gas

Spencer. 1 gas, 1 oil, 3 public utilities

Tosco. 1 gas

White's Resort. 1 gas

Shrader. 1 gas

Zuppan. 5 oil, 1 water

3. Legal Agreements

White's Resort/State Lands Agreement: The District is negotiating a lease agreement with the State Lands Commission for the upland, adjoining tidelands and submerged lands of White's Resort. Access rights across the railroad are also being reviewed under the title policy as a part of the legal description to the parcel.

Port Costa Conservation Society Maintenance Agreement: EBRPD has a 25 year Joint Operation Agreement with the Port Costa Conservation Society to operate and maintain the Society's property. The District will construct a graded trail over an existing asphalt highway that traverses the property. Grazing funds need to be allocated before the agreement is executed.

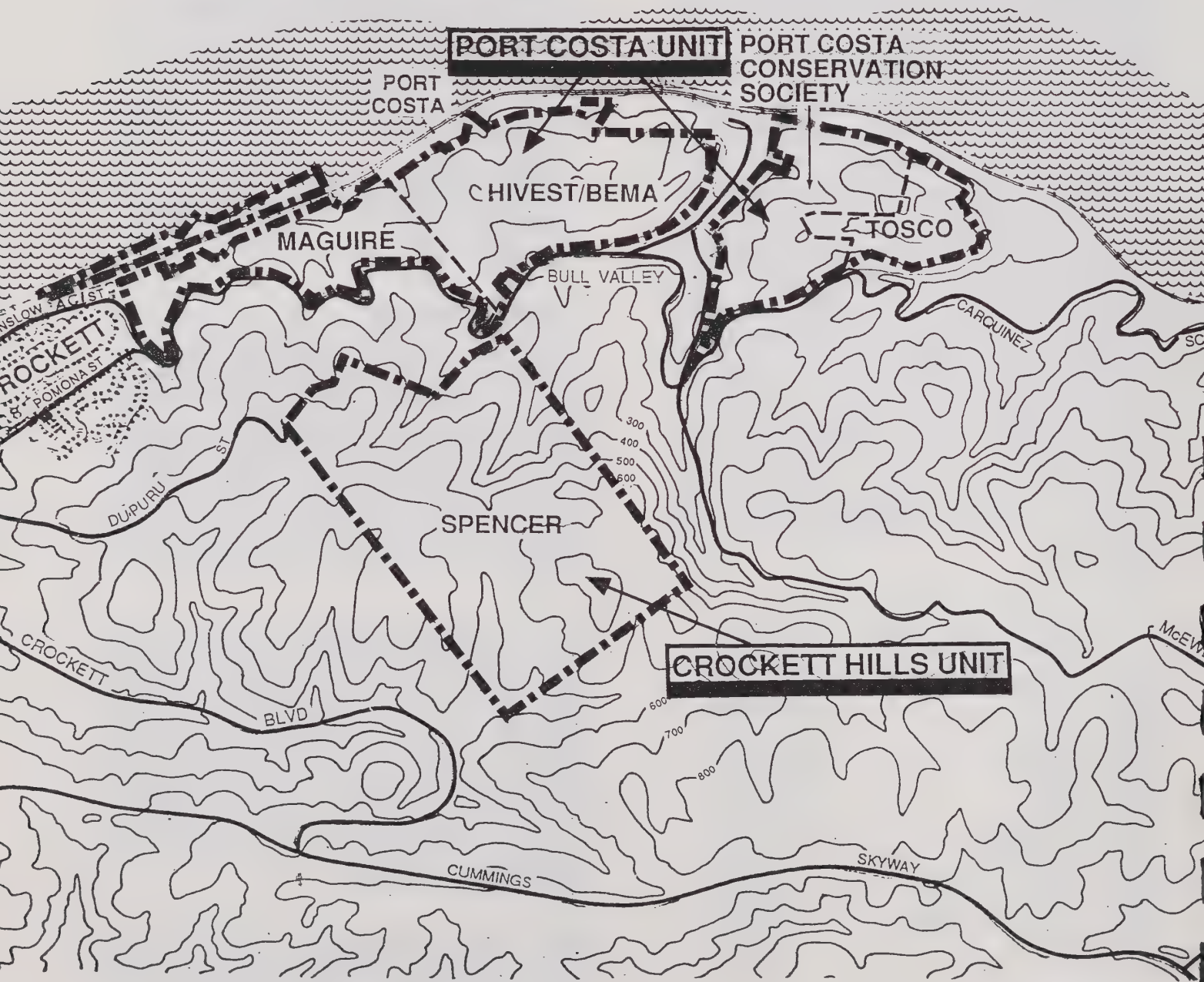
State Riding and Hiking Trail (Shumann Property Agreement): In 1983, the State Dept. of Parks and Recreation conveyed its interest in segments of the California Riding and Hiking Trail to the District, providing a trail easement from the Nejedly Staging Area through the Schumann property and into the former Zuppan property.

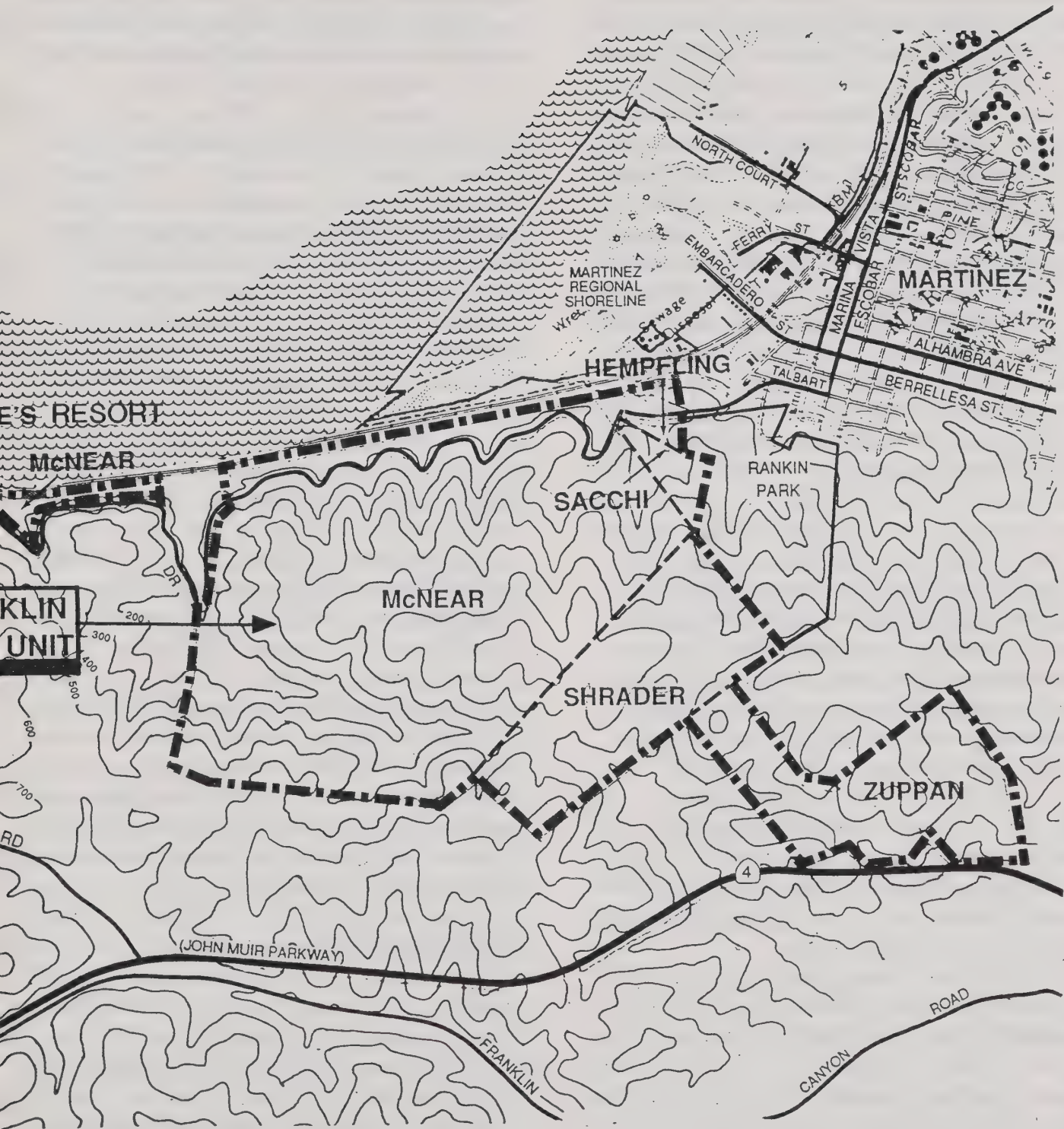
Carquinez Strait Regional Shoreline

Figure 4-5

**ACQUISITION
PARCEL MAP**

EBRPD Planning Department 1992





Ozol-Contra Costa Co. Road Closure Agreement: The District is in the process of executing a 25 year License Agreement with Contra Costa County to close the portion of Carquinez Scenic Drive between the Ozol Fuel Depot and the Nejedly Staging Area to vehicular traffic on weekends and federal holidays. Significant landslides have severed several portions of the roadway making a through-road difficult to maintain. Gated access on these closure days will be available to the two abutting property owners, their grazing tenants, the Ozol Fuel Depot operated by the U.S. Dept. of Defense, and emergency services. The District will operate the roadway on weekends and holidays as a hiking and bicycle trail.

Interstate Commerce Commission Agreement: The District negotiated an agreement with Southern Pacific Railroad in 1986 which will permit EBRPD to construct railroad crossings at three locations along the Carquinez Strait Regional Shoreline. The agreement requires the District to assume all liability associated with the design, construction, maintenance and use of the crossing.

Grazing Leases. The District operates the Carquinez Strait Regional Shoreline as a system of separate grazing units. Properties with grazing tenants include the Zuppan, Shrader, McNear, Spencer and Bema.

F. ZONING AND OTHER AGENCY DESIGNATIONS

Land Use Designations

Contra Costa County General Plan

Most of Carquinez Strait Regional Shoreline lies within Contra Costa County's jurisdiction. The land is designated "Parks and Recreation" (PR) in the 1991 Contra Costa County General Plan. This designation: "includes all publicly-owned city, district, county

and regional parks facilities... appropriate uses in the designation are passive and active recreation-oriented activities, and ancillary commercial uses such as snack bars..."

Park property is bordered on the west by the unincorporated community of Crockett. Crockett properties adjacent to Carquinez Strait Regional Shoreline are designated Single Family High (SH) and Commercial (CO). Most of the land bordering the park to the south is designated Agricultural Lands (AL). The City of Martinez lies to the east of the park. Land use designations for Martinez areas adjacent to Carquinez Strait Regional Shoreline include SH and Multiple Family Low (ML). Open space lands create a buffer between the City of Martinez and the park.

The County's General Plan strongly supports the 1988 Briones Hills Agricultural Preserve Area compact signed by the County and the cities of Martinez, Pleasant Hill, Walnut Creek, Lafayette, Orinda, Richmond, Pinole and Hercules. Carquinez Strait Regional Shoreline lies entirely within this area which also includes EBMUD land, other agricultural land and Briones Regional Park. Under this compact, the jurisdictions voluntarily agreed not to annex any lands within a 64 square mile area for urban development.

Contra Costa County Area Plans

Both the 1983 Crockett and Port Costa Area Plans have been superseded by the 1991 Contra Costa County General Plan. The 1991 Draft Crockett Area Plan refines the policies of the County General Plan as they apply to Crockett. Objectives of the Crockett plan include the following: protect and develop regional scale public access to scenic areas on the water front, provide for water-related recreation and trails in conjunction with EBRPD. The plan urges EBRPD to explore the possibility of short-term mooring facilities, to work with local industry and citizens to imple-

ment the Bay Shoreline Trail, and to consider a subsidized weekend ferry shuttle between the Crockett and Rodeo Resorts.

Port Costa Area Plan policies pertaining to Carquinez Strait Regional Shoreline include:

3-140: endorse the establishment of a regional recreation area in the vicinity of Port Costa which is oriented towards pedestrian and day use.

3-141: permit only open space uses on the lands surrounding the village, as well as the balance of the planning area.

City of Martinez

The Sacchi and Hemphling properties have a general plan designation of Public Permanent Open Space. This designation applies to areas which have potentially unstable slope, hazardous geologic conditions, watershed stability and flood hazard,

agricultural resources or are a major scenic and recreational resource. A portion of the park lies within the Franklin Canyon Conservation Zone. The Plan states that this zone should remain in open space to preserve watershed habitat scenic and agricultural resources. The Circulation Element states that the Franklin Hills Trail should be extended north to Carquinez Scenic Drive and south to Briones Park including a spur trail to the Martinez Waterfront.

Zoning (from west to east)

The Spencer, Maguire and Hivest/Bema properties are zoned A-2, General Agricultural District. The A-2 District's permitted uses include all types of agriculture, support buildings, stands, detached single family dwellings, foster homes and family day care home. Minimum lot size is five acres. The Port Costa Conservation Society property is designated A-2, and the TOSCO property H-I, Heavy

Industrial District, a remnant designation based on the property's former use. White's Resort is also zoned H-I. The H-I District's permitted uses include heavy industrial manufacturing uses of all kinds, including, but not limited to, the manufacturing or processing of petroleum, lumber, steel, chemicals, explosives, fertilizers, gas, rubber, paper, cement, sugar, and all other industrial or manufacturing products. There are no lot area limitations in this district. The McNear, Shrader and Zuppan properties are zoned A-2. See Figure 4-6

The City of Martinez zones the Sacchi and Hemphling properties "Environmental Conservation District" (ECD-R-40) which has a minimum parcel size of 40 acres. The following uses are permitted:

- a. Agricultural, including horticulture, viticulture and the raising of crops and fruit or nut-bearing trees;
- b. One single family dwelling on sites up to 20 acres in area; two single family dwellings on sites larger than 20 acres;
- c. Parks and recreational facilities; trails; picnic areas.

Franklin Hills Specific Area Plan and Final EIR, January 1987

This document was adopted by the City Council as an amendment to the 1973 Central Martinez Specific Area Plan and 1972 Martinez General Plan. The plan covers 500 acres of undeveloped hills including the Hemphling and Sacchi properties. The Hemphling property is considered "Sensitive Land" and Sacchi is designated as "Public Permanent Open Space". Policy 30.621 designates the area extending from the Carquinez Straits to Route 4, as "Environmentally Sensitive Lands or Pulic Permanent Open Space".

Martinez Park System Master Plan 1987-1992, 1988

This plan states, "The need for additional park and recreation facilities in Martinez is steadily increasing due to residential and business development along the Highway 4 corridor. The Martinez park system provides excellent facilities and serves a tremendous number of people from adjacent areas. Indications seem to point to a high demand for recreation services such as company group programs utilizing various picnic areas and other park amenities. There will probably be greater lunch-hour demand for jogging and casual outings as well as structured evening sports league programs."

The Martinez trail network includes destinations to Briones Regional Park. The Major Trails Master Plan shows two trails in the vicinity of Carquinez Strait Regional Shoreline: The California Riding and Hiking Trail which skirts the eastern edge portion of Carquinez Strait Regional Shoreline and a shoreline trail (Martinez Shoreline Segment).

The Bay Trail:

ABAG has been the lead agency in developing the Bay Trail which would encircle the San Francisco and San Pablo Bays. The Ridge Trail, another regional trail, would encircle prominent ridgelines and the Bay Trail which would parallel the ridge trail but which would follow the shoreline. Connections between these two facilities are an important feature of both trail concepts. Eventually the 400-mile Bay Trail will be accessible to the 6 million people who now live within five miles of the Bay. The Bay Trail Plan was prepared pursuant to Senate Bill 100 which mandated that the Bay Trail provide connections to existing park and recreational facilities.

Three segments of the Bay Trail will tie Carquinez Strait Regional Shoreline to the Bay Trail system: 1) a proposed spine trail going

east-west along Carquinez Scenic Dr. and south-east down McEwen Rd. to the John Muir National Historic Site; 2) a proposed spur trail along the shoreline section of Carquinez Strait Regional Shoreline near Port Costa and 3) a connector trail from Martinez Regional Shoreline to the John Muir National Historic Site. Carquinez Strait Regional Shoreline's location between two toll bridges increases the park's significance as a staging area for people who cross either or both of the bridges in their trail use pattern.

The Bay Trail Plan Final EIR, June 1989, states that the Draft EIR is amended to read: The FEIR for Carquinez Strait Trail and staging areas specified that the portion of the trail along Carquinez Scenic Drive which is affected by traffic from the Ozol Terminal will not be developed until the trucks have been rerouted or have ceased to operate along that route.

North Contra Costa County Shoreline Corridor and Rodeo Waterfront Feasibility Study, June 1992.

This study was undertaken to assess the feasibility of a five and one-half mile stretch of shoreline trail connecting two East Bay Regional Park District parks: Lone Tree Point in Rodeo and Carquinez Strait Regional Shoreline at the Bull Valley Staging Area east of Crockett. The study was commissioned by the North Contra Costa Shoreline Joint Powers Authority, including representatives from the EBRPD, Contra Costa County Board of Supervisors and the Coastal Conservancy. Southern Pacific railroad does not permit use of its active rail rights-of-way. Therefore, the study investigated the only continuous public right-of-way, San Pablo Ave., Pomona Street, and Carquinez Scenic Drive. The preferred bikeway alternative of this study is a Class II lane on both sides of San Pablo Ave. from Rodeo to Crockett. The existing informal route is a Class III along the entire length of

San Pablo Ave., Pomona Street, and Carquinez Scenic Drive.

There are several Pedestrian Pathway Alternatives. The upland alternative recommends a continuous hiking and equestrian trail from the Selby Open Space west of the Carquinez Bridge to the Bull Valley Staging Area using a combination of maintenance access roads, cattle trails and the Cummings Skyway overpass of I-80.

Adjacent Land Uses

North: Water-related uses to the north of Carquinez Strait Regional Shoreline include recreational and commercial boating and fishing. Southern Pacific Railroad's double-track main line borders the northern edge of the park. Southern Pacific trains make ten trips per day with five additional trips by switch engine and local trains. Amtrak runs ten times a day and proposes an increase of another six to ten trips per day.

South: Land use to the south is predominantly agricultural with a scattering of ranchette properties.

East: Adjoining lands to the east of the park include open space lands of the City of Martinez: Rankin Park, Rankin Open Space and the Franklin Hills Open Space.

West: The unincorporated community of Crockett forms the western boundary of the park. Land use adjacent to the park is single family residential and commercial.

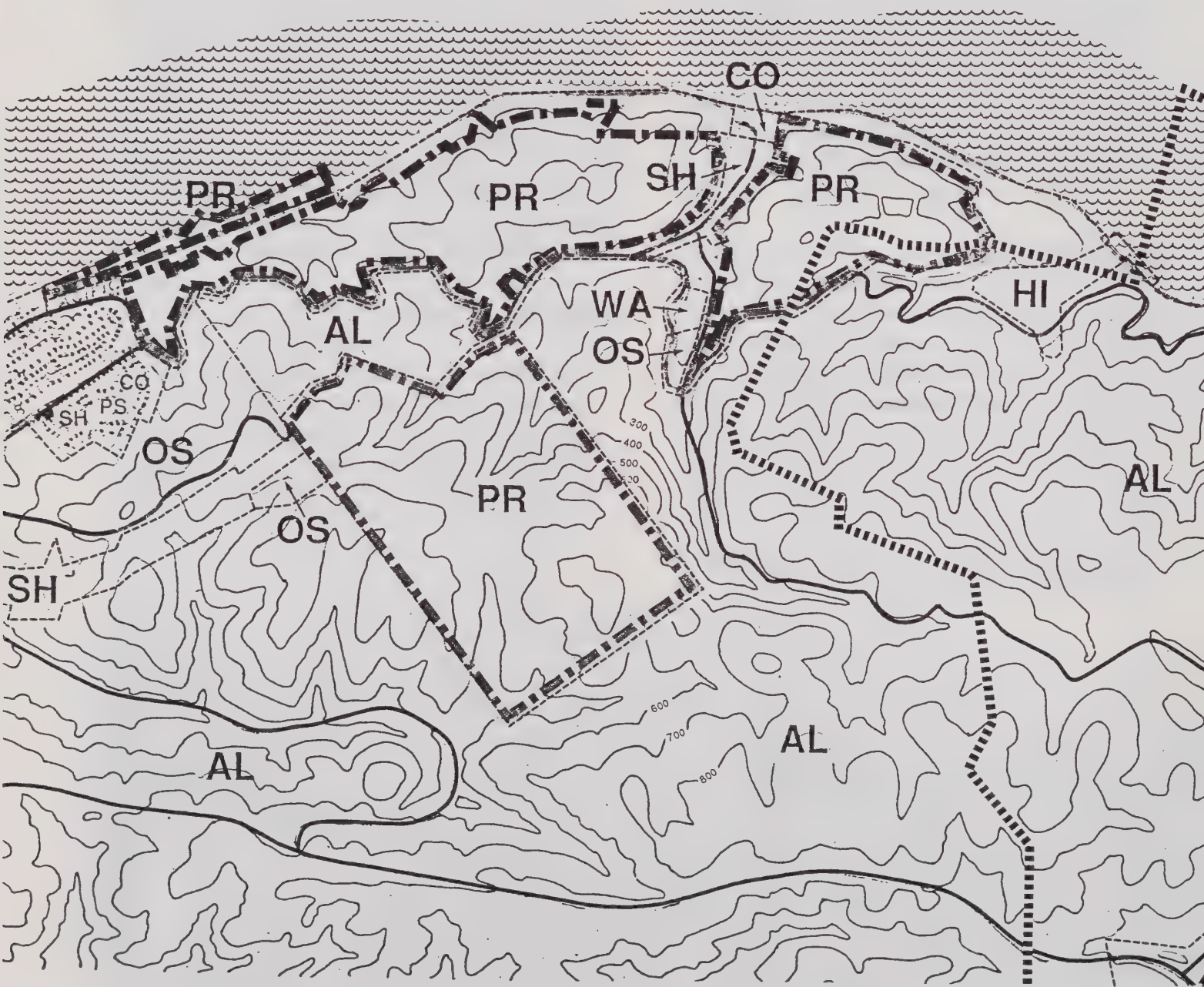
3. Resource Issues

- Coordinate public agency policies to protect natural and visual resources and develop trails and water related recreation facilities on open space land between Crockett and Martinez.



GENERAL PLAN DESIGNATIONS

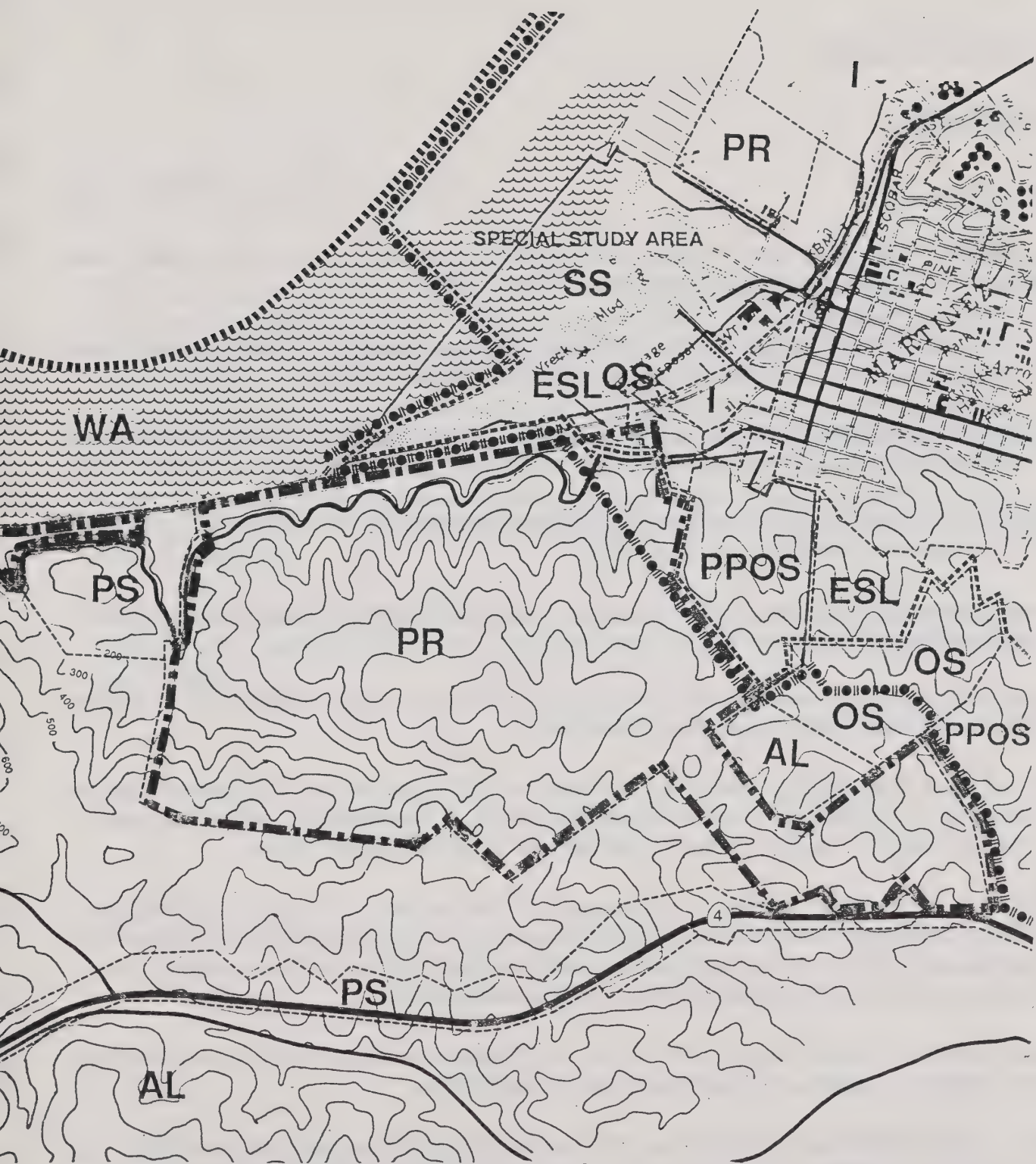
EBRPD Planning Department 1992



LEGEND

1991 CONTRA COSTA COUNTY GENERAL PLAN

AL	Agricultural Lands	HI	Heavy Industry
PR	Parks and Recreation	CO	Commercial
OS	Open Space	SH	Single Family High
PS	Public/Semi-Public		Main Town of Crockett
WA	Water		Mix of SL, SH, ML, MH,
			CO, PS, HI



CITY OF MARTINEZ PLANNING DEPARTMENT

●●●●●●	Martinez Sphere of Influence	OS	Open Space
-----	Martinez Municipal Boundary	I	Industrial
.....	Martinez Sphere of Interest	SS	Special Study Area
PPOS	Public Permanent Open Space		Main city of Martinez
ESL	Environmentally Sensitive Land		Mix of Group 1, 2, 3, OS, MU
PR	Parks and Recreation		

V. BIBLIOGRAPHY

BIBLIOGRAPHY

References Cited:

- Delisle, Glenn E., 1966. Preliminary Fish and Wildlife Plan for the San Francisco Bay-Estuary. San Francisco Bay Conservation and Development Commission
- Diblee, T.W., 1980, Preliminary Geologic Map of the Benicia Quadrangle, Contra Costa and Solano Counties, Calif., U.S. Geological Survey Open-File Report 80-400.
- Earthquake, in Field Trip Guidebook for the Second Conference on Earthquake Hazards in the Eastern San Francisco Bay Area March 25-29, 1992, Calif. State University, Hayward, Calif
- EIP Assoc., 1988, Draft EIR Carquinez Shoreline Trail and Staging Area, SCH #87102716, prepared for the East Bay Regional Park District Sept. 23.
- Emanuels, George, 1991, California's Contra Costa County An Illustrated History, Diablo Books, Walnut Creek, Calif
- Encom, Charles and Dick Murdock, 1977, Port Costa 1879-1941 A Saga of Sails, Sacks and Rails, Murdock-Edom Publications, Port Costa, Calif
- Nilsen, T.H., V.A. Frizzell, J.D. Simms and J.A. Bartow, 1975, Preliminary Photointerpretation Map and Other Surficial Deposits of the Benicia 7 1/2' Quadrangle, Contra Costa and Solano Counties, Calif., U.S. Geological Survey Open-File Map 75-277-4.
- Schwartz, D.P., D. Pantosti, S. Hecker, K. Okumura, K.E. Budding and T. Powers, 1992, The Rogers Creek Fault Zone: Fault Behaviour and Earthquake Potential, in Field Trip Guidebook for the Second Conference on Earthquake Hazards in the Eastern San Francisco Bay Area March 25-29, 1992, Calif. State University, Hayward, Calif.
- Soil Survey of Contra Costa County, 1977, USDA Soil Conservation Service in Cooperation with University of California Agricultural Experiment Station.
- Taylor, C.L., 1992, Historical Perspective on the Location of the Calaveras Fault, in the Field Trip Guidebook for the Second Conference on Earthquake Hazards in the Eastern San Francisco Bay Area March 25-29, 1992, Calif. State University, Hayward, Calif.
- Toppozada, T.R., 1992, Location and Magnitude of the "Mare Island" Earthquake, in Field Trip Guidebook for the Second Conference on Earthquake Hazards in the Eastern San Francisco Bay Area March 25-29, 1992, Calif. State University, Hayward Calif.

VI. REPORT PREPARATION

The Resource Analysis was prepared by the Planning/Stewardship Department of the East Bay Regional Park District. The Planning/Stewardship staff, under the direction of Tom Mikkelsen, Assistant General Manager, Planning/Stewardship, Design and Construction and Maxine Turner, Chief, Planning/Stewardship Department, was led by Jocelyn Real, Park Planner and Project Manager, and included work by Ken Burger, Stewardship Manager, Laurel Collins, Geologist, Joe DiDonato, Wildlife Specialist, Ray Budzinski, Range Management Specialist, Kelly Tovey, Planning Technician and Linda Faria, Secretary. Photographs were taken by Bob Walker, Jocelyn Real and Nancy McKay. Historical photographs were acquired through the Contra Costa County Historical Society.

This information and support of other departments within the District, particularly the Operations Department and Park Supervisor Bill Nichols are hereby gratefully acknowledged.

VII. APPENDICES

APPENDIX A

PURPOSE AND ROLE OF THE EAST BAY REGIONAL PARK DISTRICT

The East Bay Regional Park District ("EBRPD" or "District") is a State authorized special district within Contra Costa and Alameda Counties. The District encompasses 49 parklands on approximately 71,063 acres of land. The District derives its powers from the State Public Resources Code, Sections 5500-5595. These sections: (1) established the District; (2) set procedures for acquiring, using and disposing of District property; (3) empower the District with design and maintenance of the system; (4) establish wards, the Board of Directors, officers and the right to employ staff; (5) give the District the right of eminent domain; (6) give the power to create ordinances, resolutions and motions; and (7) give the power to tax.

The EBRPD is governed by an elected Board of Directors. The Board is responsible for establishing policies and objectives, as necessary, to accomplish the District's purposes. The District's policies and objectives are: (1) to provide a diversified land and water system of regional parks; (2) to acquire, preserve and interpret significant examples of the natural environment; (3) to cooperate with other public agencies in the development of non-park open space lands; (4) to emphasize balance of both environmental concerns and regional recreation opportunities; and (5) to develop a dispersed parklands system close to the people.

APPENDIX B

EAST BAY REGIONAL PARK DISTRICT PLANNING PROCESS

Following parkland acquisition, the District's planning process is to prepare a Resource Analysis. The purpose of the Resource Analysis is to identify the significant resource values which may be adversely affected by parkland uses. Subsequent to the preparation of this analysis, a hearing is held to solicit public comments and suggestions. The next step in the process is the formulation of a Land Use-Development Plan (LUDP) and its environmental impact documentation. Once again, a hearing is to be held to receive public review and comment.

1. Regional Shoreline Classification and Purpose

The East Bay Regional Park District Master Plan 1989, designated Carquinez Strait Regional Shoreline as a potential Regional Shoreline. The Regional Shoreline purpose and standards state:

Purpose:

A Regional Shoreline preserves for public use significant recreational, educational, natural or scenic values on land, water and tidal areas, along the bay, a river, or an estuary.

Minimum Standards:

To be considered as a Regional Shoreline, an area must have one of the following characteristics:

- Be a shoreline area (or a group of smaller areas that are connected by trail or water access) that possess a variety of natural environments and manageable

units of tidal, near-shore areas, wet lands and uplands that can be used for scientific, educational or environmental purposes.

- Be a shoreline area of land and water that can provide a variety of regional recreational activities, such as swimming, fishing, boating or viewing.

2. Planning and Management Guidelines

- A Regional Shoreline will conserve the significant resource values of the Alameda and Contra Costa shorelines and of shoreline-related recreation.
- Maximum public access to the Regional Shoreline will be provided through a variety of compatible shoreline recreational opportunities, while the District preserves or, when necessary, restores near-natural shoreline environments. Trails, roads and other park improvements will be designed to avoid or minimize impacts on sensitive wildlife habitats and rare plant populations.
- The District may develop areas within a Regional Shoreline that are designated as Recreation Units for active recreational pursuits. These may include beaches, picnic areas, shoreline meadow or turfed areas, shoreline and pier fishing areas, small marinas, boat landings and launch ramps, visitor centers, outdoor educational or interpretive facilities, viewpoints and necessary concessions.
- The shoreline area immediately adjacent to the water will be available for public enjoyment and education. The natural areas are designated as Natural Units. The District will confine, where pos-

sible, all staging facilities (except for those that must be on the shoreline or over the water surface) to uplands that are a minimum of 100 feet from the actual shoreline. Facilities such as parking that do not depend on water will be in areas that are outside the general view of the public.

- Regional Shorelines will be accessible by public transit whenever feasible; by public ferry or private boat; or by a transportation system that connects to an inland site.

3. Adopted Park Planning Reports

Two Land Evaluations for Interim Use (LEIU) were approved by the Board of Directors to provide initial public access to land acquisitions prior to a comprehensive public land use planning process.

An LEIU was approved in 1988 to open parkland at the west end of Carquinez Strait Regional Shoreline including the Maguire and Hivest/Bema parcels. A second LEIU was approved in 1990 to open land acquisitions at the east end of the park.

4. Revisions to Resource Analysis

The Resource Analysis includes all appropriate resource and site information available at the time the document is created. If new studies are commissioned and completed by the District or other public agencies or private individuals, these reports should be included in the Resource Analysis. Since the Resource Analysis is accepted by the East Bay Regional Park District Board of Directors, any new studies need to be combined with existing data and given to the Board of Directors for their acceptance. This process would require two public hearings, one general public hear-

ing for the discussion of the document and one public hearing at the Board of Directors level for their acceptance.

Suggestions concerning revisions to the Resource Analysis should be directed to the Planning/Stewardship Department of the East Bay Regional Park District.

APPENDIX C

WILD PLANT INFO LIST - KEY TO ABBREVIATIONS

* or O In the far left column, * = confirmed sighting, O = not yet confirmed.

Vegcode 1st two letter of genus, 1st two letters of species, 1st letter of variety (if present), number (if the letter combination is not unique).

Page Page number in: Munz, P.A. and D.D. Keck. 1973. A California Flora, combined ed. University of California Press, Berkeley. ("s" preceding the page number indicates an entry in the supplement section).

Family Contemporary names (with an "aceae" ending) were used for all families. Some contemporary name spellings and the traditional equivalents are listed below:

<u>Contemporary</u>	<u>Traditional</u>	<u>Common Name</u>
Apiaceae	Umbelliferae	Carrot Family
Asteraceae	Compositae	Sunflower Family
Brassicaceae	Cruciferae	Mustard Family
Fabaceae	Leguminosae	Pea Family
Poaceae	Gramineae	Grass Family
Lamiaceae	Labiatae	Mint Family

Strata F Fern
 G Grass or Grasslike
 H Herb
 S Shrub
 T Tree

E-Range Elevation range, in feet, for each species in California (based on Munz). If the maximum elevation range is unknown, the estimate ends with the digit "1" (ie. 5001 = estimated max elev. of 5000 feet).

Vegtype Plant community type(s) in which the plant is usually found (based on Munz and personal observation).

C Chaparral
 E mixed Evergreen forest
 F Freshwater marsh
 G Grassland (valley grassland in Munz)
 O Oak woodland (foothill woodland in Munz)
 R Redwood forest
 S Scrub, brush (coastal sage scrub in Munz)
 W riparian Woodland (found along drainages, not a specific community in Munz)

NI N Native
 I Introduced

L Longevity: A Annual
 AB Annual or Biennial
 AP Annual or Perennial
 B Biennial
 P Perennial

Carquinez Regional Shoreline Plant Inventory - March 16, 1992

C Genus	Species	Variety	Vegcode	Munz	Common Name	Family	Strata	E-Range	Vegtype	NI/L
TREES										
* Acacia	melanoxyton		ACME	797	BLACKWOOD ACACIA	Fabaceae	T	0 4001	O S	IP
* Aesculus	californica		AECA2	994	CALIFORNIA BUCKEYE	Anacardiaceae	T	0 4000	E O S	NP
* Eucalyptus	globulus		EUGL2	963	BLUE GUM	Myrtaceae	T	0 4001	E	IP
* Juglans	hindsii		JUNI	909	CALIFORNIA BLACK WALNUT	Juglandaceae	T	0 2500	O	NP
* Pinus	radiata		PIRA	54	MONTEREY PINE	Pinaceae	T	0 1000	E	NP
* Populus	fremontii		POFR3	910	FREMONT COTTONWOOD	Salicaceae	T	0 6500	W	NP
* Ptelea	crenulata		PTCR	992	WESTERN HOPTREE	Rutaceae	T	0 2000	O S	NP
* Quercus	agrifolia		QUAG	904	COAST LIVE OAK	Fagaceae	T	0 3000	E O	NP
* Quercus	douglasii		QUDO	905	BLUE OAK	Fagaceae	T	0 3500	O	NP
* Quercus	lobata		QULO	904	VALLEY OAK	Fagaceae	T	0 2000	O	NP
* Robinia	pseudo-acacia		ROPS	855	BLACK LOCUST	Fabaceae	T	0 5001	O S	IP
* Salix	laevigata		SALA4	913	RED WILLOW	Salicaceae	T	0 5000	E	RSW NP
* Umbellularia	californica		UMCA1	77	BAY LAUREL	Lauraceae	T	0 5000	E OR	NP
SHRUBS										
* Adenostoma	fasciculatum		ADFA	778	CHAMISE	Rosaceae	S	0 5000	C	GO S NP
* Aesculus	californica		AECA1	994	CALIFORNIA BUCKEYE	Sapindaceae	S	0 4000	E O S	NP
* Aristolochia	californica		ARCA6	966	DUTCHMAN'S PIPE	Aristolochiaceae	S	0 1500	CE O	NP
* Artemisia	californica		ARCA7	1236	CALIFORNIA SAGEBRUSH	Asteraceae	S	0 2500	E	S NP
* Baccharis	pilularis	consanguinea	BAPIC	1226	COYOTE BRUSH	Asteraceae	S	0 2000	CE	GORS NP
* Ceanothus	thyrsiflorus		CETH	979	BLUE BRUSH	Rhamnaceae	S	0 2000	CE	RS NP
* Diplacus	aurantiacus		DIAU1	624	BUSH MONKEY-FLOWER	Scrophulariaceae	S	0 3000	CE	RS NP
* Dirca	occidentalis		DIOC3	987	WESTERN LEATHERWOOD	Thymelaeaceae	S	0 1500	CE	NP
* Eriophyllum	confertiflorum		ERCO7	1149	GOLDEN YARROW	Asteraceae	S	0 8000	C	S NP
* Heteromeles	arbutifolia		HEAR2	794	CHRISTMAS BERRY or TOYON	Rosaceae	S	0 4000	CE O S	NP
* Holodiscus	discolor		HODI	759	CREAM BUSH or OCEAN SPRAY	Rosaceae	S	0 4500	CE	RS NP
* Osmaronia	cerasiformis		OSCE	791	OSO BERRY	Rosaceae	S	0 5600	CE	RS NP
* Prunus	virginiana	demissa	PRVID	790	WESTERN CHOKE-CHERRY	Rosaceae	S	0 8200	C O	NP
* Ptelea	crenulata		PTCR	992	HOP TREE	Rutaceae	S	0 2000	O S	NP
* Rhus	diversiloba		RHDI	998	POISON OAK	Anacardiaceae	S	0 5000		GORSW NP
* Ribes	californicum		RICA1	752	HILL GOOSEBERRY	Saxifragaceae	S	0 2500	CE	OR NP
* Robinia	pseudo-acacia		ROPS	855	BLACK LOCUST	Fabaceae	S	0 5001	O S	IP
* Rosa	gymnocarpa		ROGY	788	WOOD ROSE	Rosaceae	S	0 6000	CE	ORS NP
* Salix	laevigata		SALA4	913	RED WILLOW	Salicaceae	S	0 5000	E	RSW NP
* Salix	lasiolepis		SALA3	915	ARROYO WILLOW	Salicaceae	S	0 7000	E	ORSW NP
* Sambucus	caerulea		SACA4	1047	BLUE ELDERBERRY	Caprifoliaceae	S	0 10000	CE O S	NP
* Symphoricarpos	mollis		SYMO	1049	CREeping SNOWBERRY	Caprifoliaceae	S	0 5000	CE O	NP
* Symphoricarpos	rivularis		SYRI	1049	COMMON SNOWBERRY	Caprifoliaceae	S	0 4000	E	ORS NP
* Umbellularia	californica		UMCA2	77	BAY LAUREL	Lauraceae	S	0 5000	E OR	NP
HERBS										
* Achillea	millefolium		ACM1	1228	MILFOIL	Asteraceae	H	0 5001	GO S	IP
* Achyrachaena	mollis		ACMO	1107	BLOW-WIVES	Asteraceae	H	0 1000	GO	NA
* Agoseris	grandiflora		AGGR1	1293		Asteraceae	H	0 6200	GO	NP
* Alchemilla	occidentalis		ALOC1	777	WESTERN LADY'S MANTLE	Rosaceae	H	0 2000	E	GO NA
* Allium	serratum		ALSE	1374	SERRATUM ONION	Liliaceae	H	0 3000	GO	NP
* Amsinckia	intermedia		AMIN	589	COMMON FIDDLENECK	Boraginaceae	H	0 5000	GO	NA
* Anagallis	arvensis		ANAR2	404	SCARLET PIMPERNEL	Primulaceae	H	0 4001	CE	GORS IA
* Anthriscus	neglecta	scandix	ANNES	s138	BUR CHERVIL	Apiaceae	H	0 5001	CE	GORS IA
* Aristolochia	californica		ARCA6	966	DUTCHMAN'S PIPE	Aristolochiaceae	H	0 1500	CE O	NP
* Artemisia	douglasiana		ARDO3	1237	CALIFORNIA MUGWORT	Asteraceae	H	0 6000	CE	ORS NP
* Asclepias	californica		ASCA3	455	ROUND-HOOD MILKWEED	Asclepiadaceae	H	0 7500	C O	NP
* Asclepias	cordifolia		ASCO1	455	PURPLE MILKWEED	Asclepiadaceae	H	500 6300	CE O	NP
* Aster	radulinus		ASRA1	1197	BROAD-LEAF ASTER	Asteraceae	H	300 5000	E O S	NP
* Astragalus	asymmetricus		ASAS2	878	ASYMMETRICAL LOCO	Fabaceae	H	200 2500	GO	NP
* Astragalus	oxyphrys		ASOX	878	LOCO	Fabaceae	H	250 2750	GO	NP
* Barbarea	orthoceras	dolichocarpa	BAORD	238	WINTER CRESS	Brassicaceae	H	1001 11000	W	NP
* Bellardia	trixago		BETR	657		Scrophulariaceae	H	0 4001	E	GO S IA
* Brassica	campestris		BRCA3	236	COMMON YELLOW MUSTARD	Brassicaceae	H	0 5001	CE	GORS IA

Carquinez Regional Shoreline Plant Inventory - March 16, 1992

C	Genus	Species	Variety	Vegcode	Munz	Common Name	Family	Strata	E-Range	Vegtype	NI/L
*	Brassica	geniculata		BRGE	236	LATE MUSTARD	Brassicaceae	H	0	5001	GO IBP
*	Brassica	kaber	pinnatifida	BRKAP	237	CHARLOCK	Brassicaceae	H	0	5001	CE GORS IA
*	Brassica	nigra		BRN1	236	BLACK MUSTARD	Brassicaceae	H	0	5001	CE GORS IA
*	Brodiaea	congesta		BRCO2	1386	OOKOW	Liliaceae	H	0	4001	E GO NP
*	Brodiaea	laxa		BRLA2	1381	ITHURIEL'S SPEAR	Liliaceae	H	0	4600	CE GO NP
*	Brodiaea	pulchella		BRPU	1385	BLUE DICKS	Liliaceae	H	0	5001	E GO S NP
*	Calandrinia	ciliata	menziesii	CACIM	299	RED MAIDS	Portulacaceae	H	0	6000	GO NA
*	Calystegia	subcaulis		CASU6	s85	SHORT-STEM MORNING-GLORY	Convolvulaceae	H	0	1500	O S NP
*	Capsella	bursa-pastoris		CABU3	247	SHEPHERD'S PURSE	Brassicaceae	H	0	7000	CE GO S IA
*	Cardamine	oligosperma		CAOL	242	HILL CRESS	Brassicaceae	H	0	3000	C O S NA
*	Carduus	pycnocephalus		CAPY2	1280	ITALIAN THISTLE	Asteraceae	H	0	4001	CE GO S IA
*	Castilleja	affinis		CAAF	671	INDIAN PAINT BRUSH	Scrophulariaceae	H	0	7001	CE O S NP
*	Castilleja	foliolosa		CAFO2	671	WOOLLY PAINTED CUP	Scrophulariaceae	H	0	5000	CE GO S NP
*	Centaurea	calcitrapa		CECA1	1283	PURPLE STAR THISTLE	Asteraceae	H	0	4001	E GO S IAB
*	Centaurea	solstitialis		CES01	1283	YELLOW STAR THISTLE	Asteraceae	H	0	5001	CE GO S IA
*	Cerastium	viscosum		CEVI	277	MOUSE-EAR CHICKWEED	Caryophyllaceae	H	0	4001	CE GO S IA
*	Chlorogalum	pomeridianum		CHPO1	1329	SOAP ROOT	Liliaceae	H	0	5000	GO S NP
*	Chrysopsis	villosa	echioides	CHVIE	1169	HAIRY GOLDEN ASTER	Asteraceae	H	0	2000	GO S NP
*	Cirsium	vulgare		CIVU	1276	BULL THISTLE	Asteraceae	H	0	5000	CE GORS IB
*	Clarkia	purpurea	quadrivulnera	CLPUQ	940	FOUR-SPOT CLARKIA	Onagraceae	H	0	6000	CE GO S NA
*	Clematis	lasiantha		CLLA3	103	OLD MAN'S BEARD	Ranunculaceae	H	0	6000	C O W NP
*	Collinsia	heterophylla		COHE1	644	CHINESE HOUSES	Scrophulariaceae	H	0	2500	CE GO S NA
*	Conium	maculatum		COMA1	1011	POISON HEMLOCK	Apiaceae	H	0	5000	E GO S IB
*	Cynara	cardunculus		CYCA1	1273	CARDUON/ARTICHOKE THISTLE	Asteraceae	H	0	3000	GO IP
*	Cynoglossum	grande		CYGR	557	HOOND'S TONGUE	Boraginaceae	H	0	5000	E O NP
*	Dipsacus	syvestris		DISY	1057	TEASEL	Dipsacaceae	H	0	2001	GO IB
*	Dodecatheon	hendersonii		DOHE	401	SHOOTING STAR	Primulaceae	H	0	6700	E GO NP
*	Eriogonum	latifolium	nudum	ERLAN	352	TIBINAGUA/NUDE BUCKWHEAT	Polygonaceae	H	0	8000	CE O S NP
*	Erodium	botrys		ERBO	144	GRAPE STORK'S BILL	Geraniaceae	H	0	4001	CE GORS IA
*	Erodium	cicutarium		ERIC2	145	RED-STEM FILAREE	Geraniaceae	H	0	6000	CE GORS IA
*	Erodium	moschatum		ERMO4	144	WHITE-STEM FILAREE	Geraniaceae	H	0	4001	CE GORS IA
*	Eschscholzia	californica	crocea	ESCAC	198	CALIFORNIA POPPY	Papaveraceae	H	0	6500	CE GO NP
*	Eucrypta	chrysanthemifolia		EUCH	519	COAST ELLISIA	Hydrophyllaceae	H	0	3000	C O S NA
*	Euphorbia	lathyris		EULA1	168	CAPER SPURGE	Euphorbiaceae	H	0	5001	GO S IAB
*	Euphorbia	oblongata		EUOB	s16	SPURGE	Euphorbiaceae	H	0	3001	GO IP
*	Euphorbia	spathulata		EUSP	168	WART SPURGE	Euphorbiaceae	H	0	4000	CE GO S NA
*	Evax	sparsiflora		EVSP	1266	DWARF EVAX	Asteraceae	H	0	2500	CE GO S NA
*	Filago	gallica		FIGA	1264	COTTON-ROSE	Asteraceae	H	0	5001	CE GO S IA
*	Foeniculum	vulgare		FOVU	1016	SWEET FENNEL	Apiaceae	H	0	4001	CE GO S IP
*	Galium	aparine		GAAP	1040	GOOSE GRASS or CLEAVERS	Rubiaceae	H	0	7500	CE GORS IA
*	Galium	nuttallii		GANU2	1042	NUTTALL GALIUM	Rubiaceae	H	0	3000	CE O S NP
*	Galium	trifidum	subbiflorum	GATRS	1040	GALIUM	Rubiaceae	H	0	8000	E GO SW NP
*	Geranium	carolinianum		GECA4	141	CAROLINA GERANIUM	Geraniaceae	H	0	5000	CE GORS NA
*	Geranium	dissectum		GED1	141	CUT-LEAF GERANIUM	Geraniaceae	H	0	3000	CE GORS IA
*	Geranium	molle		GEMO	142	HAIRY GERANIUM	Geraniaceae	H	0	3001	CE GORS IA
*	Gilia	tricolor		GITR2	482	BIRD'S-EYE GILIA	Polemoniaceae	H	0	2000	GO NA
*	Grindelia	camporum		GRCA	1166	GUM PLANT	Asteraceae	H	0	4001	GO NP
*	Hedera	helix		HEHE1	1000	ENGLISH IVY	Araliaceae	H	0	5001	O SW IP
*	Helianthella	castanea		HECA5	1091	MOUNT DIABLO SUNFLOWER	Asteraceae	H	500	4000	GO NP
*	Hypochoeris	glabra		HYGL	1302	SMOOTH CAT'S-EAR	Asteraceae	H	0	5001	CE GORS IA
*	Hypochoeris	radicata		HYRA2	1302	HAIRY CAT'S-EAR	Asteraceae	H	0	5001	CE GORS IP
*	Lactuca	serriola		LASE1	1304	PRICKLY LETTUCE	Asteraceae	H	0	5001	CE GORS IA
*	Lactuca	virosa		LAVI1	1304	TALL LETTUCE	Asteraceae	H	0	4001	CE G S IB
*	Lathyrus	latifolius		LALA3	891	EVERLASTING PEA	Fabaceae	H	0	5001	E GO IP
*	Lathyrus	vestitus	bolanderi	LAVEB	892	HILLSIDE PEA	Fabaceae	H	0	4000	E RS NP
*	Layia	platyglossa	campestris	LAPLC	1111	TIDY TIPS	Asteraceae	H	0	4000	E GO S NA
*	Lepidium	nitidum		LENI	228	COMMON PEPPER-GRASS	Brassicaceae	H	0	3000	C G S NA
*	Linum	grandiflorum		LIGR3	153	GARDEN FLAX	Linaceae	H	0	2001	GO S IA
*	Lithophragma	affine		LIAF	s108	WOODLAND STAR	Saxifragaceae	H	0	3500	CE GO S NP
*	Lithophragma	heterophylla		LIHE	737	HILL STAR	Saxifragaceae	H	0	6500	CE GO S NP
*	Lomatium	dasyarpum		LODA1	1024	LACE PARSNIP	Apiaceae	H	0	5000	CE GO S NP
*	Lomatium	utriculatum		LOUT1	1022	BLADDER PARSNIP	Apiaceae	H	0	5000	GO NP
*	Lotus	corniculatus		LOC02	850	BIRD'S-FOOT TREFOIL	Fabaceae	H	0	5001	CE GO S IP

Carquinez Regional Shoreline Plant Inventory - March 16, 1992

C. Genus	Species	Variety	Vegcode	Munz	Common Name	Family	Strata	E-Range	Vegtype	NI/L
* Lotus	scoparius		LOSC	849	DEER WEED	Fabaceae	H	0 5000	C S	NP
* Lotus	subpinnatus		LOSU2	846	CALF LOTUS	Fabaceae	H	0 2500	CE GO S	NA
* Lupinus	bicolor	microphyllus	LUBIM2	816	DOVE LUPINE	Fabaceae	H	0 5000	CE GO S	NA
* Lupinus	bicolor	tridentatus	LUBIT1	816	DOVE LUPINE	Fabaceae	H	0 5001	CE GO S	NA
* Lupinus	densiflorus		LUDE	810	WHITE or PURPLE LUPINE	Fabaceae	H	0 2000	CE GO S	NA
* Lupinus	subvexus		LUSU3	809	CHICK LUPINE	Fabaceae	H	0 2500	GO	NA
* Lupinus	succulentus		LUSU4	813	ARROYO LUPINE	Fabaceae	H	0 2000	GO	NA
* Madia	gracilis		MAGR1	1116	GUM-WEED	Asteraceae	H	0 7800	CE GO S	NA
* Malva	nicaeensis		MANI1	129	BULL MALLOW	Malvaceae	H	0 5001	CE GO S	IA
* Marah	fabaceus		MAFA1	1059	VALLEY MANROOT	Cucurbitaceae	H	0 2500	E GO S	NP
* Marrubium	vulgare		MAVU	695	COMMON HOREHOUND	Lamiaceae	H	0 9000	CE GO S	IP
* Matricaria	matricarioides		MAMA3	233	PINEAPPLE WEED	Asteraceae	H	0 9000	CE GO S	NA
* Medicago	polymorpha		MEPO	s116	BUR CLOVER	Fabaceae	H	0 9000	CE GO S	IA
* Melilotus	indicus		MEIN1	832	YELLOW MELILOT	Fabaceae	H	0 9000	CE GO S	IAB
* Micropus	californicus		MICA1	1265	COTTON TOP	Asteraceae	H	0 5000	CE GO S	NA
* Mimulus	guttatus		MIGU	616	COMMON MONKEY-FLOWER	Scrophulariaceae	H	0 10000		W NP
* Monardella	villosa		MORV1	712	COYOTE MINT	Lamiaceae	H	0 3000	E	S NP
* Montia	perfoliata		MOPE2	302	MINER'S LETTUCE	Portulacaceae	H	0 5000	CE GORS	NA
* Nemophila	heterophylla		NEHE	522	WHITE NEMOPHILA	Hydrophyllaceae	H	0 5000	C O S	NA
* Nemophila	menziesii		NEME	520	BABY BLUE-EYES	Hydrophyllaceae	H	0 5000	C GO S	NA
* Nemophila	parviflora		NEPA	522	NEMOPHILA	Hydrophyllaceae	H	0 6000	E OR W	NA
* Nemophila	pedunculata		NEPE	521	SPREADING NEMOPHILA	Hydrophyllaceae	H	0 7500	CE GORSW	NA
* Orthocarpus	purpurascens		ORPU1	662	PURPLE OWL'S CLOVER	Scrophulariaceae	H	0 3000	GO S	NA
* Orthocarpus	pusillus		ORPU2	664	DWARF OWL'S CLOVER	Scrophulariaceae	H	0 4000	E GO	NA
* Osmorhiza	chilensis		OSCH	1009	MOUNTAIN WOOD-CICELY	Apiaceae	H	0 8000	E R	NP
* Oxalis	corniculata		OXCO1	148	CREEPING WOOD SORREL	Oxalidaceae	H	0 5001	G	IP
* Oxalis	pes-caprae		OXPE1	147	BERMUDA BUTTERCUP	Oxalidaceae	H	0 2001	GO S	IP
* Papaver	californicum		PACA2	201	WESTERN POPPY	Papaveraceae	H	0 2500	C O	NA
* Pedicularis	densiflora		PEDE1	658	INDIAN WARRIOR	Scrophulariaceae	H	0 6000	C O	NP
* Perideridia	gairdneri		PEGA	1013	SQUAW-ROOT	Apiaceae	H	0 11000		W NP
* Phacelia	imbricata		PHIM	532	ROCK PHACELIA	Hydrophyllaceae	H	0 3000	C O	NP
* Phacelia	tanacetifolia		PHTA	529	TANSY-LEAF PHACELIA	Hydrophyllaceae	H	0 4000	CE GO S	NA
* Picris	echioides		PIEC	1303	BRISTLY OX-TONGUE	Asteraceae	H	0 5001	E GO S	IAB
* Plantago	erecta		PLER2	s79	CALIFORNIA DWARF PLANTAIN	Plantaginaceae	H	0 2500	C GO S	NA
* Plantago	lanceolata		PLLA	408	ENGLISH PLANTAIN	Plantaginaceae	H	0 5001	E GORS	IA
* Plectritis	ciliata		PLCI	1056	LONG-SPURRED PLECTRITIS	Valerianaceae	H	0 4000	GO	NA
* Polygonum	aviculare		POAV	362	WIRE GRASS	Polygonaceae	H	0 3001	CE GO S	NA
* Potentilla	glandulosa		POGL2	774	STICKY CINQUEFOIL	Rosaceae	H	0 8000	CE GO S	NP
* Psoralea	physodes		PSPH	851	CALIFORNIA TEA	Fabaceae	H	0 7500	CE O S	NP
* Ranunculus	californicus		RACA2	95	CALIFORNIA BUTTERCUP	Ranunculaceae	H	0 3000	E GO SW	NP
* Ranunculus	muricatus		RAMU1	97	SPINY-FRUITED BUTTERCUP	Ranunculaceae	H	0 3000		W IA
* Raphanus	sativus		RASA2	238	WILD RADISH	Brassicaceae	H	0 5001	GO	IA
* Rorippa	nasturtium-aquaticum		RONA	240	WATER CRESS	Brassicaceae	H	0 8000		W IP
* Rumex	acetosella		RUAC	356	SHEEP SORREL	Polygonaceae	H	0 10000	GO	IP
* Rumex	crispus		RUCR2	358	CURLY DOCK	Polygonaceae	H	0 7001	E GO S	IP
* Rumex	obtusifolius	agrestis	RUOBA	359	BITTER DOCK	Polygonaceae	H	0 3001	GO W	IP
* Sanicula	bipinnata		SABI2	1006	POISON SANICLE	Apiaceae	H	0 5000	GO S	NP
* Sanicula	bipinnatifida		SABI3	1005	PURPLE SANICLE	Apiaceae	H	0 6000	C GO	NP
* Sanicula	crassicaulis		SACR2	1005	GAMBLE WEED	Apiaceae	H	0 4500	GORS	NP
* Scandix	pecten-veneris		SCPE	1008	SHEPHERD'S NEEDLE	Apiaceae	H	0 5001	CE GO S	IA
* Scrophularia	californica		SCCA2	642	CALIFORNIA FIGWORT	Scrophulariaceae	H	0 2000		RSW NP
* Scutellaria	tuberosa	similis	SCTU	694	BLUE SKULL-CAP	Lamiaceae	H	0 5000	C O	NP
* Senecio	vulgaris		SEVU	1252	COMMON GROUNDSEL	Asteraceae	H	0 5001	CE GOR	IA
* Sherardia	arvensis		SHAR1	1045	BLUE FIELD MADDER	Rubiaceae	H	0 5001	GO	IA
* Silene	gallica		SIGA	288	WINDMILL PINK	Caryophyllaceae	H	0 5001	CE GO S	IA
* Silene	marianum		SIMA2	1273	MILK THISTLE	Asteraceae	H	0 5001	CE GORS	IAB
* Sisyrinchium	bellum		SIBE	1392	BLUE-EYED GRASS	Iridaceae	H	0 3000	GO	NP
* Sonchus	asper		SOAS	1304	PRICKLY SOW-THISTLE	Asteraceae	H	0 5001	E GORS	IA
* Sparganium	bocconii		SPBO	284		Caryophyllaceae	H	0 2001	G	IA
* Stachys	rigida		STRI	700	HEDGE NETTLE	Lamiaceae	H	0 8000	R	NP
* Stellaria	media		STME	275	COMMON CHICKWEED	Caryophyllaceae	H	0 5001	E ORS	IA
* Stylomecon	heterophylla		STHE2	200	WIND POPPY	Papaveraceae	H	0 4000	C GO	NA
* Tillaea	aquatica		TIAQ	719	WATER PYGMY	Crassulaceae	H	0 2000		W NA

Carquinez Regional Shoreline Plant Inventory - March 16, 1992

C Genus	Species	Variety	Vegcode	Munz	Common Name	Family	Strata	E-Range	Vegtype	NI/L
* Tillaea	erecta		TIER	719	SAND PYGMY	Crassulaceae	H	0 2500	CE O S	NA
* Torilis	nodosa		TONO	1007	KNOTTED HEDGE PARSLEY	Apiaceae	H	0 2000	E O	IA
* Tragopogon	porrifolius		TRPO1	1301	OYSTER ROOT or SALSIFY	Asteraceae	H	0 5001	GO S	IBP
* Trifolium	bifidum	decipiens	TRBD	834	PINOLE CLOVER	Fabaceae	H	0 2300	E G	NA
* Trifolium	dubium		TRDU2	834	SHAMROCK CLOVER	Fabaceae	H	0 2500	G S	IA
* Trifolium	hirtum		TRHI	837	ROSE CLOVER	Fabaceae	H	0 4001	GO	IA
* Trifolium	incarnatum		TRIN2	837	CRIMSON CLOVER	Fabaceae	H	0 4001	GO S	IA
* Trifolium	tridentatum		TRTR2	841	TOMCAT CLOVER	Fabaceae	H	0 5000	GO	NA
* Vicia	americana	oregana	VIAMO	895	AMERICAN VETCH	Fabaceae	H	0 5000	E GO S	NP
* Vicia	angustifolia		VIAN	896	COMMON VETCH	Fabaceae	H	0 5001	E GORS	IA
* Vicia	villosa		VIVI1	896	WINTER VETCH	Fabaceae	H	0 5001	GO S	IAB
* Wyethia	angustifolia		WYAN	1085	NARROW LEAF MULE-EARS	Asteraceae	H	0 5500	GO	NP
* Wyethia	glabra		WYGL	1084	SMOOTH MULE-EARS	Asteraceae	H	0 2700	CE	NP
* Xanthium	spinosum		XASP	1105	SPIKY CLOTHUR	Asteraceae	H	0 3000	CE GO S	NA
* Zigadenus	fremontii		ZIFR	1334	STAR ZYGADENE	Liliaceae	H	0 3500	CE GO	NP

GRASSES & GRASSLIKE

* Agrostis	diegoensis		AGDI	1521	LEAFY REDTOP	Poaceae	G	0 7500	CE GO SW	NP
* Aira	caryophyllea		AICA	1514	SILVER HAIRGRASS	Poaceae	G	0 5000	CE GO S	IA
* Avena	fatua		AVFA	1514	WILD OAT	Poaceae	G	0 5001	CE GO S	IA
* Bromus	carinatus		BRCA1	1470	CALIFORNIA BROME GRASS	Poaceae	G	0 10000	CE GO S	NAB
* Bromus	diandrus		BRDI2	s187	RIPGUT / NEEDLE BROME	Poaceae	G	0 4001	CE GO S	IA
* Bromus	mollis		BRMO2	1473	SOFT BROME or SOFT CHEAT	Poaceae	G	0 5001	CE GO S	IA
* Bromus	rubens		BRRU	1474	RED / FOXTAIL BROME	Poaceae	G	0 4001	CE GO S	IA
* Bromus	tectorum		BRT	1474	CHEAT GRASS	Poaceae	G	0 9001	CE GO S	IA
* Carex	sp.		CAR1	1428	SEDGE	Cyperaceae	G	0 12001		P
* Cynosurus	echinatus		CYEC	1495	DOGTAIL GRASS	Poaceae	G	0 5001	GO	IA
* Cyperus	eragrostis		CYER1	1425		Cyperaceae	G	0 2001	FGO W	NP
* Eleocharis	macrostachya		ELMA2	s183	COMMON SPIKE-RUSH	Cyperaceae	G	0 8000	F	W NP
* Elymus	condensatus		ELCO	1505	GIANT WILD-RYE	Poaceae	G	0 5000	CE O S	NP
* Elymus	glaucus		ELGL	1505	BLUE WILD-RYE	Poaceae	G	0 7500	CE GO S	NP
* Elymus	triticoideus		ELTR	1505	BEARDLESS WILD-RYE	Poaceae	G	0 7500	CE GO S	NP
* Festuca	megalura		FEME	1476	FOXTAIL FESCUE	Poaceae	G	0 5500	CE GO S	NA
* Festuca	reflexa		FERE	1476	FEW-FLOWERED FESCUE	Poaceae	G	0 5000	CE GO S	NA
* Hordeum	californicum		HOCAL	1508	CALIFORNIA MEADOW BARLEY	Poaceae	G	0 8500	GO S	NP
* Hordeum	geniculatum		HOG	s190	MEDITERRANEAN BARLEY	Poaceae	G	0 6001	CE GO S	IA
* Hordeum	leporinum		HOLE	1509	FOXTAIL BARLEY	Poaceae	G	0 5001	CE GOR	IA
* Juncus	bufonius		JUBU	1405	TOAD RUSH	Juncaceae	G	0 8000		W NA
* Juncus	patens		JUPA2	1404	SPREADING RUSH	Juncaceae	G	0 5000		W NP
* Juncus	xiphioides		JUX1	1411	IRIS-LEAVED RUSH	Juncaceae	G	0 7000		W NP
* Koeleria	macrantha		KOMA	s190	JUNEGRASS	Poaceae	G	0 11500	CE GO S	NP
* Lolium	multiflorum		LOMU	1510	ITALIAN RYEGRASS	Poaceae	G	0 4001	CE GO S	IP
* Lolium	perenne		LOPE1	1509	PERENNIAL RYEGRASS	Poaceae	G	0 4001	CE GO S	IP
* Melica	torreyana		METO1	1498	TORREY MELIC	Poaceae	G	0 2500	CE	NP
* Phalaris	canariensis		PHCA4	1542		Poaceae	G	0 5001	GO S	IA
* Poa	annua		POAN1	1484	ANNUAL BLUEGRASS	Poaceae	G	0 3000	CE GO S	IA
* Poa	scabrella		POSC3	1489	PINE BLUEGRASS	Poaceae	G	0 5000	CE GO S	NP
* Sitanion	jubatum		SIJU	1506	BIG SQUIRRELTAIL	Poaceae	G	0 10000	CE GO S	NP
* Stipa	pulchra		STPU	1532	PURPLE NEEDLEGRASS	Poaceae	G	0 5000	C GO S	NP
* Triticum	aestivum		TRAE	1507	WHEAT	Poaceae	G	0 5001	G	IA

FERNS

* Dryopteris	arguta		DRAR	42	COASTAL WOOD-FERN	Aspidiaceae	F	0 5000	E ORS	NP
* Pityrogramma	triangularis		PITR	37	GOLDENBACK FERN	Pteridaceae	F	0 5000	E ORS	NP

APPENDIX D - LIST OF WILDLIFE SPECIES

WILDLIFE LIST - KEY TO ABBREVIATIONS

* or 0	* = Confirmed sighting, 0 = not yet confirmed.
Habitat	A Aquatic (saltwater) = bay or estuary
	B Broadleaf evergreen & mixed coniferous forest, redwoods
	C Chaparral
	G Grassland
	L Lakes
	Mf Marsh (Freshwater)
	Ms Marsh (Saltwater)
	N coastal strAnd, beaches
	O Oak woodland, savanna
	R Redwoods, coniferous forest, needle-leaf trees
	S coastal Scrub, brush
	W riparian Woodland
Frequency	R Resident all year
	M Migrant, including seasonal residents
	F Fall
	Sp Spring
	Su Summer
	W Winter
	a Abundant
	c Common
	fc Fairly Common
	u Uncommon
	r Rare
NI N Native	
	I Introduced

Wildlife List - Carquinez Straits - March 10, 1992

79

Common Name	Scientific Name	Family	Habitat	Frequency	
<u>NI</u>					
<u>Amphibians</u>					
O Bullfrog	<i>Rana catesbiana</i>	Ranidae	GLMf	O W	I
O Frog, California Red-legged	<i>Rana aurora draytoni</i>	Ranidae	B GLMf	OR W	N
O Frog, Foothill Yellow-legged	<i>Rana boylei</i>	Ranidae	B	OR W	N
* Newt, Coast Range California	<i>Taricha torosa torosa</i>	Salamandridae	B GL	ORSW	N
O Newt, Northern Rough-skinned	<i>Taricha granulosa granulosa</i>	Salamandridae	B GL	ORSW	N
O Salamander, Arboreal	<i>Aneides lugubris</i>	Plethodontidae	G	O S	N
* Salamander, California Slender	<i>Batrachoseps attenuatus</i>	Plethodontidae	B G	ORSW	N
O Salamander, California Tiger	<i>Ambystoma tigrinum californiense</i>	Ambystomatidae	B GL	O W	N
O Salamander, Yellow-eyed	<i>Ensatina eschscholtzi xanthoptica</i>	Plethodontidae	B	ORSW	N
* Toad, California Western	<i>Bufo boreas halophilus</i>	Bufoiidae	B GL	ORSW	N
O Toad, Western Spadefoot	<i>Scaphiopus hammondi</i>	Pelobatidae	G	O W	N
* Treefrog, Pacific	<i>Hyla regilla</i>	Hylidae	B GLMf	ORSW	N
<u>Reptiles</u>					
O Boa, Pacific Rubber	<i>Charina bottae bottae</i>	Boidae	B G	ORSW	N
* Kingsnake, California Common	<i>Lampropeltis getulus californiae</i>	Colubridae	BCG Mf	ORSW	N
O Lizard, Calif. Southern Alligator	<i>Gerrhonotus multicarinatus multicarinatus</i>	Anguillidae	BCG	ORS	N
O Lizard, California Coast Horned	<i>Phrynosoma coronatum frontale</i>	Iguanidae	B G	ORSW	N
O Lizard, Northern Sagebrush	<i>Sceloporus graciosus graciosus</i>	Iguanidae	C	RSW	N
* Lizard, Northwestern Western Fence	<i>Sceloporus occidentalis occidentalis</i>	Iguanidae	B G	O S	N
* Lizard, S.F. Northern Alligator	<i>Gerrhonotus coeruleus coeruleus</i>	Anguillidae	B G	ORS	N
O Racer, Alameda Striped	<i>Masticophis lateralis euryxanthus</i>	Colubridae	BCG	SW	N
* Racer, Western Yellow-bellied	<i>Coluber constrictor mormon</i>	Colubridae	G	RSW	N
* Rattlesnake, N. Pacific Western	<i>Crotalus viridis oregonus</i>	Viperidae	BCG	MORSW	N
O Skink, Variegated Gilbert's	<i>Eumeces gilberti cancellosus</i>	Scincidae	B G	OR W	N
* Skink, Western (western subspp.)	<i>Eumeces skiltonianus skiltonianus</i>	Scincidae	B G	ORSW	N
O Snake, California Black-headed	<i>Tantilla planiceps eiseni</i>	Colubridae	BCG	O SW	N
O Snake, California Glossy	<i>Arizona elegans occidentalis</i>	Colubridae	BCG	O S	N
* Snake, California Night	<i>Hypsiglena torquata nuchalata</i>	Colubridae	BCG	O S	N
* Snake, Pacific Gopher	<i>Pituophis melanoleucus catenifer</i>	Colubridae	B G	ORS	N
* Snake, Pacific Ringneck	<i>Diadophis punctatus amabilis</i>	Colubridae	BCG	ORS	N
O Snake, Santa Cruz W. Aquatic Garter	<i>Thamnophis couchi atratus</i>	Colubridae	B G Mf	O SW	N
O Snake, S.F. Common Garter	<i>Thamnophis sirtalis tetrataenia</i>	Colubridae	B GLMf	O W	N
* Snake, Sharp-tailed	<i>Contia tenuis</i>	Colubridae	B G	ORSW	N
O Snake, Valley Common Garter	<i>Thamnophis sirtalis fitchi</i>	Colubridae	B GLMf	O W	N
O Snake, Western Aquatic Garter	<i>Thamnophis couchi aquaticus</i>	Colubridae	B G Mf	O SW	N
O Snake, Western Long-nosed	<i>Rhinocheilus lecontei lecontei</i>	Colubridae	G	S	N
* Snake, Western Terrestrial Garter	<i>Thamnophis elegans terrestris</i>	Colubridae	BCG	ORS	N
O Turtle, Western Pond	<i>Clemmys marmorata</i>	Testudinidae	B GLMf	OR W	N
O Whiptail, California Western	<i>Cnemidophorus tigris mundus</i>	Teiidae	BC	ORSW	N

Wildlife List - Carquinez Straits - March 10, 1992

80

Common Name	Scientific Name	Family	Habitat	Frequency	
<u>NI</u>					
<u>Birds</u>					
* Blackbird, Brewer's	Euphagus cyanocephalus	Emberizidae	B GLMf	SW	Ra N
* Blackbird, Red-winged	Agelaius phoeniceus	Emberizidae	Mf	W	Ra N
O Bluebird, Mountain	Sialia currucoides	Muscicapidae	B	OR	MrW N
* Bluebird, Western	Sialia mexicana	Muscicapidae	B	ORSW	Rc N
O Bufflehead	Bucephala albeola	Anatidae	A L	W	McW N
* Bunting, Lazuli	Passerina amoena	Emberizidae	BC	SW	McS N
* Bushtit	Psaltirparus minimus	Aegithalidae	BC	S	Rc N
* Chickadee, Chestnut-backed	Parus rufescens	Paridae	B	R	Rc N
O Coot, American	Fulica americana	Rallidae	A GLMfMs	W	MaW,fcS N
* Cowbird, Brown-headed	Molothrus ater	Emberizidae	B G	W	Rc N
* Crow, American	Corvus brachyrhynchos	Corvidae	B G	N W	MaW,cS N
O Dipper, American	Cinclus mexicanus	Cinclidae		W	Rr N
* Dove, Mourning	Zenaidura macroura	Columbidae	B G	OR	Rc N
* Dove, Rock (Domestic Pigeon)	Columba livia	Columbidae			Rc I
O Duck, Wood	Aix sponsa	Anatidae	LMf	O W	MuW,rs N
O Eagle, Bald	Haliaeetus leucocephalus	Accipitridae	B L	R W	MrW N
* Eagle, Golden	Aquila chrysaetos	Accipitridae	BCG	ORSW	Ru N
O Egret, Great	Casmerodius albus	Ardeidae	A GLMfMsN	W	Rc N
O Egret, Snowy	Egretta thula	Ardeidae	A GLMfMsN	W	Rc N
* Falcon, Peregrine	Falco peregrinus	Falconidae	B	OR	MrW N
O Falcon, Prairie	Falco mexicanus	Falconidae	G	O	Rr N
* Finch, House	Carpodacus mexicanus	Fringillidae	B	SW	Ra N
* Finch, Purple	Carpodacus purpureus	Fringillidae	B	R	McW,fcS N
* Flicker, Northern (Red-shafted)	Colaptes auratus	Picidae	B	OR W	McW,fcS N
* Flycatcher, Ash-throated	Myiarchus cinerascens	Tyrannidae	BC	O SW	MfcS N
O Flycatcher, Hammond's	Empidonax hammondi	Tyrannidae	B	R	MrSp N
* Flycatcher, Olive-sided	Contopus borealis	Tyrannidae	B	R	MuS N
* Flycatcher, Western	Empidonax difficilis	Tyrannidae	B	R W	McS N
O Gadwall	Anas strepera	Anatidae	A GLMf	N	McW,fcS N
O Gnatcatcher, Blue-gray	Poliophtila caerulea	Muscicapidae	BC Mf	SW	MfcS,rW N
* Goldfinch, American	Carduelis tristis	Fringillidae	B	W	Rc N
* Goldfinch, Lawrence's	Carduelis lawrencei	Fringillidae	BC	O W	MuS,rW N
* Goldfinch, Lesser	Carduelis psaltria	Fringillidae	B	SW	Rc N
* Goose, Canada	Branta canadensis	Anatidae	A GLMfMsNO		McW,rs N
* Grosbeak, Black-headed	Pheucticus melanocephalus	Emberizidae	BC L	SW	McS N
O Grosbeak, Blue	Guiraca caerulea	Emberizidae	B	SW	MuS N
* Gull, Bonaparte's	Larus philadelphia	Laridae	A GLMfMsN	W	MaW N
* Gull, California	Larus californicus	Laridae	A GL	N W	MaW,cS N
O Gull, Glaucous-winged	Larus glaucescens	Laridae	A GL	N W	MaW,rs N
O Gull, Heermann's	Larus heermanni	Laridae	A L	N W	MfcSF N
* Gull, Herring	Larus argentatus	Laridae	A GL	MsN W	McW N
O Gull, Mew	Larus canus	Laridae	A GL	N W	McW N
* Gull, Ring-billed	Larus delawarensis	Laridae	A GLMfMsN	W	MaW,fcS N
* Harrier, Northern	Circus cyaneus	Accipitridae	G Mf	O W	McW,fcS N
* Hawk, Cooper's	Accipiter cooperii	Accipitridae	B	R W	MuW,rs N
* Hawk, Ferruginous	Buteo regalis	Accipitridae	G	O	MuW N
O Hawk, Rough-legged	Buteo lagopus	Accipitridae	G	O	MuW N
* Hawk, Red-shouldered	Buteo lineatus	Accipitridae	B Mf	R W	Rr N
* Hawk, Red-tailed	Buteo jamaicensis	Accipitridae	B G	O	Rc N
* Hawk, Sharp-shinned	Accipiter striatus	Accipitridae	B	R	MuW N
O Heron, Black-crowned Night	Nycticorax nycticorax	Ardeidae	A GLMfMsN	W	Rfc N
* Heron, Great Blue	Ardea herodias	Ardeidae	A LMfMsN	W	Rfc N
* Heron, Green-backed	Butorides striatus	Ardeidae	LMf	W	MuS,rW N
* Hummingbird, Allen's	Selasphorus sasin	Trochilidae	BC	RSW	McS N
* Hummingbird, Anna's	Calypte anna	Trochilidae	BC		Rc N
O Hummingbird, Black-chinned	Archilochus alexandri	Trochilidae	BC	SW	MrS N
O Hummingbird, Calliope	Stellula calliope	Trochilidae	B G	RSW	MuS,fcFSp N
* Hummingbird, Rufous	Selasphorus rufus	Trochilidae	B G	RSW	MfcFSp N
* Jay, Scrub	Aphelocoma coerulescens	Corvidae	BC	O SW	Rc N

Wildlife List - Carquinez Straits - March 10, 1992

81

Common Name	Scientific Name	Family	Habitat	Frequency	
<u>NI</u>					
* Jay, Stellar's	Cyanocitta stelleri	Corvidae	B	R	Rc
* Junco, Dark-eyed (Oregon)	Junco hyemalis	Emberizidae	B	Mf	RS
0 Junco, Dark-eyed (Slate-colored)	Junco hyemalis	Emberizidae	B	Mf	RS
* Kestrel, American	Falco sparverius	Falconidae	G	O	Rc
* Killdeer	Charadrius vociferus	Charadriidae	A	GL	N W McW,fcS
* Kingbird, Western	Tyrannus verticalis	Tyrannidae	G	O	W MfcS
0 Kingfisher, Belted	Ceryle alcyon	Alcedinidae	L	W	MuW
* Kinglet, Ruby-crowned	Regulus calendula	Muscicapidae	B	R	McW
* Kite, Black-shouldered	Elanus caeruleus	Accipitridae	G	Mf	O W Rc
* Lark, Horned	Eremophila alpestris	Alaudidae	G		Rc
0 Magpie, Yellow-billed	Pica nuttalli	Corvidae	B	O	W Rc
* Mallard	Anas platyrhynchos	Anatidae	A	GLMfMsN	McW,fcS
* Meadowlark, Western	Sturnella neglecta	Emberizidae	G	O	Rc
0 Merganser, Common	Mergus merganser	Anatidae	A	L	W MfcW,rS
0 Merganser, Red-breasted	Mergus serrator	Anatidae	A	L	W McW
* Merlin	Falco columbarius	Falconidae	B	G	O MrW
* Mockingbird, Northern	Mimus polyglottos	Mimidae	B	G	S Rc
0 Nuthatch, Red-breasted	Sitta canadensis	Sittidae	B		R MfcW,uS
* Nuthatch, White-breasted	Sitta carolinensis	Sittidae	B		R W Rc
0 Oriole, Hooded	Icterus cucullatus	Emberizidae	B		SW MuS
* Oriole, Northern (Bullock's)	Icterus galbula	Emberizidae	B		W McS
* Osprey	Pandion haliaetus	Accipitridae	L		W MrF,rSp
* Owl, Burrowing	Athene cucularia	Strigidae	G	O	Ru
* Owl, Common Barn	Tyto alba	Tytonidae	G	O	Rfc
* Owl, Great Horned	Bubo virginianus	Strigidae	B	Mf	R W Rc
* Owl, Northern Pygmy	Glaucidium gnoma	Strigidae	B		Ru
0 Owl, Northern Saw-whet	Aegolius acadicus	Strigidae	B	Mf	R Ru
* Owl, Western Screech	Otus kennicottii	Strigidae	B		O SW Rc
0 Phainopepla	Phainopepla nitens	Ptilonotidae	B		O SW MuS,rW
0 Pheasant, Ring-necked	Phasianus colchicus	Phasianidae	B	G Mf	OR Rc
* Phoebe, Black	Sayornis nigricans	Tyrannidae	B	G	W Rfc
* Phoebe, Say's	Sayornis saya	Tyrannidae	B	G	O SW MfcW,rS
* Pigeon, Band-tailed	Columba fasciata	Columbidae	B		OR McW,uS
0 Pintail, Northern	Anas acuta	Anatidae	A	GLMfMsN	MaW,uS
* Pipet, Water	Anthus spinoletta	Motacillidae	G	N	McW
0 Plover, Black-bellied	Pluvialis squatarola	Charadriidae	A	GLMfMsN	MaW,uS
0 Plover, Semipalmated	Charadrius semipalmatus	Charadriidae	GL	N	W McFSp,fcW,rS
0 Poorwill, Common	Phalaenoptilus nuttallii	Caprimulgidae	B	G	O SW MuS
* Quail, California	Callipepla californica	Phasianidae	BC		O S Rc
* Raven, Common	Corvus corax	Corvidae	B		R W Ru
0 Roadrunner, Greater	Geococcyx californianus	Cuculidae	BCG		S Rr
* Robin, American	Turdus migratorius	Muscicapidae	B		W MaW,cS
0 Sandpiper, Least	Calidris minutilla	Scolopacidae	A	GLMfMsN	W MaW
0 Sandpiper, Pectoral	Calidris melanotos	Scolopacidae		GLMfMsN	MrF
* Sandpiper, Spotted	Actitis macularia	Scolopacidae	L		W MuW
0 Sandpiper, Western	Calidris mauri	Scolopacidae	A	GL	MsN W MaW
* Sapsucker, Red-breasted	Sphyrapicus ruber	Picidae	B		R MuW
* Shrike, Loggerhead	Lanius ludovicianus	Laniidae	B	G	O S Rfc
* Siskin, Pine	Carduelis pinus	Fringillidae	B		R Rc
0 Snipe, Common	Gallinago gallinago	Scolopacidae		GLMf	W MfcW
0 Sparrow, Black-chinned	Spizella atrogularis	Emberizidae	C		S MuS
0 Sparrow, Chipping	Spizella passerina	Emberizidae	B		ORS MuS
* Sparrow, Fox	Passerella iliaca	Emberizidae	BC		RSW McW
* Sparrow, Golden-crowned	Zonotrichia atricapilla	Emberizidae			RSW McW
0 Sparrow, Grasshopper	Ammodramus savannarum	Emberizidae	G		O MrS
* Sparrow, House	Passer domesticus	Passeridae	B		Rc
* Sparrow, Lark	Chondestes grammacus	Emberizidae	G		O S Rc
* Sparrow, Lincoln's	Melospiza lincolni	Emberizidae	G	Mf	W MfcW
0 Sparrow, Rufous-crowned	Aimophila ruficeps	Emberizidae	B	G	S Ru
* Sparrow, Savannah	Passerculus sandwichensis	Emberizidae	G	MfMs	McW,fcS
* Sparrow, Song	Melospiza melodia	Emberizidae		Mf	SW Rc

Wildlife List - Carquinez Straits - March 10, 1992

82

Common Name	Scientific Name	Family	Habitat	Frequency	
<u>NI</u>					
* Sparrow, White-crowned	Zonotrichia leucophrys	Emberizidae	CG	S	McW,fcS
* Sparrow, White-throated	Zonotrichia albicollis	Emberizidae	B	RS	MrW
* Starling, European	Sturnus vulgaris	Sturnidae	B G		Ra
O Stilt, Black-necked	Himantopus mexicanus	Recurvirostridae	A GLMfMSN		Rc
O Swallow, Bank	Riparia riparia	Hirundinidae	GLMf	O W	MrFSp
* Swallow, Barn	Hirundo rustica	Hirundinidae	GLMf	O W	McS
* Swallow, Cliff	Hirundo pyrrhonota	Hirundinidae	GL	O W	MaS
* Swallow, Northern Rough-winged	Stelgidopteryx serripennis	Hirundinidae	GL	O W	McFSP,uS
* Swallow, Tree	Tachycineta bicolor	Hirundinidae	B G Mf	W	McFSp,uSW
* Swallow, Violet-green	Tachycineta thalassina	Hirundinidae	B	R W	McS
* Swift, White-throated	Aeronautes saxatalis	Apodidae	B	R W	McS,fcW
* Tanager, Western	Piranga ludoviciana	Emberizidae	B	R	McFSp
O Teal, American Green-winged	Anas crecca	Anatidae	A GLMf	N W	McW
O Teal, Cinnamon	Anas cyanoptera	Anatidae	A GLMfMSN		McSp,fcSW
O Tern, Black	Chlidonias niger	Laridae	GLMf	W	MrFSp
O Tern, Caspian	Sterna caspia	Laridae	A L	N W	McS
* Tern, Forster's	Sterna forsteri	Laridae	A LMfMSN	W	Rc
O Thrasher, California	Toxostoma redivivum	Mimidae	BC	SW	Rfc
* Thrush, Hermit	Catharus guttatus	Muscicapidae	B	RS	McW
* Thrush, Swainson's	Catharus ustulatus	Muscicapidae	B	R W	McS
* Thrush, Varied	Ixoreus naevius	Muscicapidae	B	RSW	McW
* Titmouse, Plain	Parus inornatus	Paridae	B	O W	Rc
* Towhee, Brown	Pipilo fuscus	Emberizidae	C	SW	Rc
* Towhee, Rufous-sided	Pipilo erythrophthalmus	Emberizidae	BC	SW	Rc
O Turkey, Wild	Meleagris gallopavo	Phasianidae	B		Rr
* Vireo, Hutton's	Vireo huttoni	Vireonidae	B	O S	Rc
* Vireo, Solitary	Vireo solitarius	Vireonidae	B		MrS
* Vireo, Warbling	Vireo gilvus	Vireonidae	B	SW	McS
* Vulture, Turkey	Cathartes aura	Cathartidae	BCG	ORSW	McS,fcW
* Warbler, Black-throated Gray	Dendroica nigrescens	Emberizidae	BC	ORS	MuFSp,rS
* Warbler, MacGillivray's	Oporornis tolmiei	Emberizidae	B	RSW	MuSp,rS
* Warbler, Nashville	Vermivora ruficapilla	Emberizidae	B Mf	RSW	MuSp,rF
* Warbler, Orange-crowned	Vermivora celata	Emberizidae	BC	W	McS,rW
* Warbler, Townsend's	Dendroica townsendi	Emberizidae	B	R	MfcW
* Warbler, Wilson's	Wilsonia pusilla	Emberizidae		SW	McFSp,fcS
* Warbler, Yellow-rumped (Audubon's)	Dendroica coronata	Emberizidae	B	N RS	McW
* Warbler, Yellow-rumped (Myrtle)	Dendroica coronata	Emberizidae	B	RSW	McW
* Waxwing, Cedar	Bombcilla cedrorum	Bombcillidae	B		McW
O Wigeon, American	Anas americana	Anatidae	A GLMfMSN		MaW
O Willet	Catoptrophorus semipalmatus	Scolopacidae	A GLMfMSN		MaW,uS
* Wood-Pewee, Western	Contopus sordidulus	Tyrannidae	B	R W	MfcS
* Woodpecker, Acorn	Melanerpes formicivorus	Picidae	B	O W	Rfc
* Woodpecker, Downy	Picoides pubescens	Picidae	B	W	Rfc
* Woodpecker, Hairy	Picoides villosus	Picidae	B Mf	R	Ru
O Woodpecker, Lewis'	Melanerpes lewis	Picidae	B	OR W	Rr
* Woodpecker, Nuttall's	Picoides nuttallii	Picidae	C	O W	Rfc
* Wren, Bewick's	Thryomanes bewickii	Troglodytidae	BC	S	Rc
* Wren, House	Troglodytes aedon	Troglodytidae	B	S	MfcS,rW
* Wren, Rock	Salpinctes obsoletus	Troglodytidae	G	W	Rfc
* Wrentit	Chamaea fasciata	Muscicapidae	BC	S	Rc
O Yellowlegs, Greater	Tringa melanoleuca	Scolopacidae	A GLMfMSN	W	MfcW
O Yellowlegs, Lesser	Tringa flavipes	Scolopacidae	A GLMfMSN	W	MrFWSp
* Yellowthroat, Common	Geothlypis trichas	Emberizidae	B G MfMS	SW	Rc

Mammals

O Badger	Taxidea taxus	Mustelidae	G	O	N
O Bat, Big Brown	Eptesicus fuscus	Vespertilionidae	B	R	N
O Bat, Brazilian Free-tailed	Tadarida brasiliensis	Molossidae	BCG	ORSW	N
O Bat, Hoary	Lasiurus cinereus	Vespertilionidae	B	R	N
O Bat, Lump-nosed	Plecotus townsendii	Vespertilionidae	B	S	N

82

Wildlife List - Carquinez Straits - March 10, 1992

83

Common Name	Scientific Name	Family	Habitat	Frequency	
NI					
* Bat, Pallid	Antrozous pallidus	Vespertilionidae	B G	OR	N
O Bat, Red	Lasiurus borealis	Vespertilionidae	B	W	N
* Bobcat	Lynx rufus	Felidae	BC	RS	N
O Cottontail, Audubon	Sylvilagus audubonii	Leporidae	B G	O SW	N
* Coyote	Canis latrans	Canidae	B G	O S	N
* Deer, Mule	Odocoileus hemionus columbianus	Cervidae	BCG	RS	N
* Fox, Gray	Urocyon cinereoargenteus	Canidae	BC	S	N
* Fox, Red	Vulpes fulva	Canidae	B G	O	I
O Fox, San Joaquin Kit	Vulpes macrotis mutica	Canidae	G	S	N
* Gopher, Botta Pocket	Thomomys bottae	Geomysidae	B G	O	N
* Hare, Black-tailed	Lepus californicus	Leporidae	BCG	S	N
* Lion, Mountain	Felis concolor	Felidae	BC	RS	N
* Mole, Broad-footed	Scapanus latimanus	Talpidae	B G	W	N
* Mouse, Brush	Peromyscus boylii	Cricetidae	C	S	N
* Mouse, California	Peromyscus californicus	Cricetidae	BC	O	N
* Mouse, California Meadow	Microtus californicus	Cricetidae	G Mfms	W	N
O Mouse, California Pocket	Perognathus californicus	Heteromyidae	CG	O S	N
* Mouse, Deer	Peromyscus maniculatus	Cricetidae	BCG	ORS	N
* Mouse, House	Mus domesticus	Muridae	G Ms	S	I
O Mouse, Little Pocket	Perognathus longimembris	Heteromyidae	CG	S	N
* Mouse, Pinyon	Peromyscus trueii	Cricetidae	BC	S	N
* Mouse, Western Harvest	Reithrodontomys megalotis	Cricetidae	B G	SW	N
O Muskrat	Ondatra zibethica	Cricetidae	LMf	W	I
* Myotis, California	Myotis californicus	Vespertilionidae	BC	O W	N
O Myotis, Long-eared	Myotis evotis	Vespertilionidae	B	R	N
* Opossum, Common	Didelphis marsupialis	Didelphidae	B	W	I
O Pig, Feral Domestic	Sus scrofa	Suidae	BCG	O SW	I
O Pipistrelle, Western	Pipistrellus hesperus	Vespertilionidae	G	O W	N
* Rabbit, Brush	Sylvilagus bachmani	Leporidae	BC	RS	N
* Raccoon	Procyon lotor	Procyonidae	B LMf	R W	N
* Rat, Black	Rattus rattus	Muridae	B	W	I
O Rat, Heermann Kangaroo	Dipodomys heermanni	Heteromyidae	CG	O S	N
* Rat, Norway	Rattus norvegicus	Muridae	B Mf	SW	I
O Ringtail	Bassariscus astutus	Procyonidae	BC	SW	N
O Shrew, Ornate	Sorex ornatus	Soricidae	B G		N
* Shrew, Trowbridge	Sorex trowbridgii	Soricidae	BC	RSW	N
O Shrew, Vagrant	Sorex vagrans	Soricidae	B G Mfms	W	N
O Skunk, Spotted	Spilogale putorius	Mustelidae	BCG	O SW	N
* Skunk, Striped	Mephitis mephitis	Mustelidae	BCG	O SW	N
* Squirrel, California Ground	Spermophilus beecheyi	Sciuridae	G	O	N
* Squirrel, Fox	Sciurus niger	Sciuridae	B		I
O Weasel, Long-tailed	Mustela frenata	Mustelidae	BCG Mf	ORSW	N
O Woodrat, Desert	Neotoma lepida	Cricetidae	CG	S	N
* Woodrat, Dusky-footed	Neotoma fuscipes	Cricetidae	BC	SW	N

APPENDIX E - LIST OF AQUATIC VERTEBRATES AND INVERTEBRATES

FISHES WHICH USE THE SACRAMENTO-SAN JOAQUIN ESTUARY AND ADJACENT WATERS AS SPAWNING AND/OR NURSERY GROUNDS

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
River Lamprey	<i>Lampetra ayresi</i>	Pacific lamprey	<i>Lampetra tridentata</i>
Kern brook lamprey, or Pacific brook lamprey	<i>Lampetra hubbsi</i> or <i>Lampetra pacifica</i>	Green sturgeon	<i>Acipenser mediorostris</i>
White sturgeon	<i>Acipenser transmontanus</i>	American shad	<i>Alosa sapidissima</i>
Pacific herring	<i>Clupea harengus pallasii</i>	Threadfin shad	<i>Dorosoma petenense</i>
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Rainbow trout or Steelhead	<i>Oncorhynchus mykiss</i>
Whitebait smelt	<i>Allosmerus elongatus</i>	Surf smelt	<i>Hypomesus pretiosus</i>
Delta smelt	<i>Hypomesus transpacificus</i>	Night smelt	<i>Spirinchus starksi</i>
Longfin smelt	<i>Spirinchus thaleichthys</i>	Pacific blacksmelt	<i>Bathylagus ochotensis</i>
California lizardfish	<i>Synodus lucioceps</i>	Northern lampfish	<i>Stenobranchius leucopsarus</i>
Blue laternfish	<i>Tarletonbeania crenularis</i>	Goldfish	<i>Carassius auratus</i>
Common carp	<i>Cyprinus carpio</i>	California roach	<i>Hesperoleucus symmetricus</i>
Hitch	<i>Lavinia exilicauda</i>	Hardhead	<i>Mylopharodon conocephalus</i>
Golden shiner	<i>Notemigonus crysoleucas</i>	Red shiner	<i>Notropis lutrensis</i>
Sacramento backfish	<i>Orthon microlepidotus</i>	Fathead minnow	<i>Pimephales promelas</i>
Splittail	<i>Pogonichthys macrolepidotus</i>	Sacramento squawfish	<i>Ptychocheilus grandis</i>
Lahontan redbreast	<i>Richardsonius egregius</i>	Sacramento sucker	<i>Cotostomus occidentalis</i>
White catfish	<i>Ictalurus catus</i>	Black bullhead	<i>Ictalurus melas</i>
Brown bullhead	<i>Ictalurus nebulosus</i>	Channel catfish	<i>Ictalurus punctatus</i>
Plainfin midshipman	<i>Porichthys notatus</i>	Northern clingfish	<i>Gobiesox maeandricus</i>
Pacific tomcod	<i>Microgadus proximus</i>	Spot cusk-eel	<i>Chilara taylori</i>
Red brotula	<i>Brosomphycis marginata</i>	Rainwater killifish	<i>Lucania parva</i>
Mosquitofish	<i>Gambusia affinis</i>	Topsmelt	<i>Atherinops affinis</i>
Jacksmelt	<i>Atherinopsis californiensis</i>	Inland silverside	<i>Menidia beryllina</i>
Three spine stickleback	<i>Gasterosteus aculeatus</i>	Bay pipefish	<i>Syngnathus leptorhynchus</i>
Striped bass	<i>Morone saxatilis</i>	Sacramento perch	<i>Archoplites interruptus</i>
Green sunfish	<i>Lepomis cyanellus</i>	Pumpkinseed	<i>Lepomis gibbosus</i>
Warmouth	<i>Lepomis gulosus</i>	Bluegill	<i>Lepomis macrochirus</i>
Redear sunfish	<i>Lepomis microlophus</i>	Smallmouth bass	<i>Micropterus dolomieu</i>
Spotted bass	<i>Micropterus punctulatus</i>	Largemouth bass	<i>Micropterus salmoides</i>
White crappie	<i>Pomoxis annularis</i>	Black crappie	<i>Pomoxis nigromaculatus</i>
Bigscale logperch	<i>Percina macrolepidota</i>	White croaker	<i>Genyonemus lineatus</i>
Barred surfperch	<i>Amphistichus argenteus</i>	Kelp perch	<i>Brachyistius frenatus</i>

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
Shiner perch	<i>Cymatogaster aggregata</i>	Black perch	<i>Embiotoca jacksoni</i>
Striped surfperch	<i>Embiotoca lateralis</i>	Spotfin surfperch	<i>Hyperprosopon anale</i>
Walleye surfperch	<i>Hyperprosopon argenteum</i>	Silver surfperch	<i>Hyperprosopon ellipticum</i>
Tule perch	<i>Hysterocarpus traski</i>	Dwarf perch	<i>Micrometrus minimus</i>
White seaperch	<i>Phanerodon furcatus</i>	Rupperlip seaperch	<i>Rhacochilus toxotes</i>
Pile Perch	<i>Rhacochilus vacca</i>	Senorita	<i>Oxyjulis californica</i>
Striped kelpfish	<i>Gibbonsia metzi</i>	Giant kelpfish	<i>Heterostichus rostratus</i>
Onespot fringehead	<i>Neoclinus uninotatus</i>	Monkeyface prickleback	<i>Cebidichthys violaceus</i>
Rock prickleback	<i>Xiphister mucosus</i>	Penpoint gunnel	<i>Apodichthys flavidus</i>
Pacific sand lance	<i>Ammodytes hexapterus</i>	Yellowfin goby	<i>Acanthogobius flavimanus</i>
Arrow goby	<i>Clevelandia ios</i>	Blackeye goby	<i>Coryopteris nicholsi</i>
Tidewater goby	<i>Eucyclogobius newberryi</i>	Longjaw mudsucker	<i>Gillichthys mirabilis</i>
Cheekspot goby	<i>Ilypnus gilberti</i>	Bay goby	<i>Lepidogobius lepidus</i>
Chameleon goby	<i>Tridentiger trigonocephalus</i>	Pacific Pompano	<i>Peprilus simillimus</i>
Brown rockfish	<i>Sebastes auriculatus</i>	Greenspotted rockfish	<i>Sebastes chlorostictus</i>
Greenstriped rockfish	<i>Sebastes elongatus</i>	Quillback	<i>Sebastes maliger</i>
Kelp greenling	<i>Hexagrammos decagrammus</i>	Lincod	<i>Ophiodon elongatus</i>
Painted grenling	<i>Oxylebius pictus</i>	Princky sculpin	<i>Cottus asper</i>
Riffle sculpin	<i>Cottus gulosus</i>	Buffalo sculpin	<i>Enophrys bison</i>
Pacific staghorn sculpin	<i>Leptocottus armatus</i>	Tidepool sculpin	<i>Oligocottus maculosus</i>
Artedius spp.	(Probably bonehead sculpin, <i>Artedius notospilotus</i>)	Pricklebreast poacher	<i>Stellerina xyosterna</i>
Speckled sanddab	<i>Citharichthys stigmaeus</i>	California halibut	<i>Paralichthys californicus</i>
Diamond turbot	<i>Hypsopsetta guttulata</i>	English sole	<i>Parophrys vetulus</i>
Starry flounder	<i>Platichthys stellatus</i>	Curlfin sole	<i>Pleuronichthys decurrens</i>
Sand sole	<i>Psettichthys melanostictus</i>	California tonguefish	<i>Symphurus atricauda</i>

APPENDIX F

VISITOR SURVEY CARQUINEZ STRAIT REGIONAL SHORELINE

The East Bay Regional Park District (EBRPD) is preparing a Land Use-Development Plan for the Carquinez Strait Regional Shoreline (CSRS). This plan will protect the natural resources of this park and provide public trails and recreation areas. EBRPD is committed to providing public recreation and resource protection in its parks. This survey will improve our knowledge of the recreational uses and demands for CSRS and will help in the development of a plan best suited to the needs of park visitors. Your cooperation is needed to make the survey results comprehensive and accurate. Thank you very much.

Date: _____

Survey conducted at: _____

1. How often do you visit the park?

- a. { } ONE TIME VISIT
- b. { } NUMBER OF DAYS PER WEEK
- c. { } NUMBER OF DAYS PER MONTH
- d. { } NUMBER OF DAYS PER YEAR
- e. { } COMMENTS:

2. What activities do you intend to participate in today?

- a. { } HIKE/WALK
- b. { } RIDE HORSES
- c. { } RIDE BICYCLES
- d. { } PICNIC/PLAY/READ/RELAX
- e. { } NATURE STUDY (BIRD WATCHING, IDENTIFYING PLANTS, ETC.)
- f. { } OTHER: _____

3. Did you come in a group or by yourself? _____

4. What attracted you to this park?

5. What facilities should be provided? (Please prioritize your choice starting with "1".)

- a. { } PICNIC AREAS
- b. { } INTERPRETIVE (ENVIRONMENTAL EDUCATION) FACILITIES
- c. { } FISHING PIER
- d. { } WATER ACCESS
- e. { } OTHER _____

6. Do you have any other comments or ideas about how the park can be improved?

7. Where do you live? _____
Street City

8. In which kind of place did you spend the most time while growing up?

- a. { } ON A FARM, RANCH OR SMALL RURAL TOWN (UNDER 1,000 POPULATION)
- b. { } IN A SMALL TO MEDIUM CITY (5,000 - 50,000 POPULATION)
- c. { } IN A MAJOR CITY OR METROPOLITAN AREA (50,000 - 1 MILLION POPULATION)

9. Do you visit other regional parks? (List)

10. Are you presently:

- a. ☐ EMPLOYED
- b. ☐ UNEMPLOYED
- c. ☐ RETIRED
- d. ☐ HOMEMAKER
- e. ☐ STUDENT

WHAT IS YOUR OCCUPATION: _____

11. Are You:

- ☐ FEMALE
- ☐ MALE

12. Are you:

- ☐ UNDER 21
- ☐ 21 - 35
- ☐ 36 - 55
- ☐ 56 - 70
- ☐ OLDER

13. Are you:

- ☐ Black
- ☐ White
- ☐ Asian
- ☐ Hispanic
- ☐ Native American
- ☐ Other: _____

Please specify

14. Is English your native language?

If not what is: _____

PLEASE SEND COMMENTS, QUESTIONS OR SUGGESTIONS REGARDING THIS SURVEY TO
THE PLANNING/STEWARDSHIP DEPARTMENT, EAST BAY REGIONAL PARK DISTRICT
P.O. BOX 2950, 2950 PERALTA OAKS COURT, OAKLAND, CA 94605 OR CALL
(510) 635-0135, EXT. 2320.

U.C. BERKELEY LIBRARIES



C124922364

